

~~XXXXXXXXXX~~  
SEQUENCE LISTING

<110> Rosenberg, Eugene  
Ron, Eliora  
Orr, Elisha  
Paitan, Yossi

<120> GENE CLUSTER

<130> 2290.00076

<140> 09/~~20070807~~ 710,262

<141> 1999-01-29

<160> 20

<170> PatentIn Ver. 2.1

<210> 1

<211> 2392

<212> PRT

<213> Myxococcus xanthus

<400> 1

Val	Asp	Pro	Ala	Arg	Leu	Thr	Arg	Ala	Trp	Glu	Gly	Leu	Leu	Glu	Arg
1				5					10					15	
Tyr	Pro	Leu	Leu	Ala	Gly	Ala	Ile	Arg	Val	Glu	Gly	Thr	Glu	Pro	Val
			20					25					30		
Ile	Val	Pro	Ser	Gly	Gln	Val	Ser	Ala	Glu	Val	His	Glu	Val	Pro	Ser
			35				40					45			
Val	Ser	Asp	Ser	Ala	Leu	Val	Ala	Thr	Leu	Arg	Ala	Ser	Ala	Lys	Val
	50					55					60				
Pro	Phe	Asp	Leu	Ala	Cys	Gly	Pro	Leu	Ala	Arg	Leu	His	Leu	Tyr	Ser
65					70					75					80
Arg	Ser	Glu	His	Glu	His	Val	Leu	Leu	Leu	Cys	Phe	His	His	Leu	Val
				85					90					95	
Leu	Asp	Gly	Ala	Ser	Val	Ala	Pro	Leu	Leu	Asp	Ala	Leu	Arg	Glu	Arg
			100					105					110		
Tyr	Ala	Gly	Thr	Glu	Ala	Lys	Ala	Gly	Leu	Leu	Glu	Val	Pro	Ile	Val
		115					120					125			

~~SECRET~~

Ala Pro Tyr Arg Ala Ala Val Glu Trp Glu Gln Leu Ala Ile Gly Gly  
130 135 140

Asp Glu Gly Arg Arg His Leu Asp Tyr Trp Arg His Val Leu Ala Thr  
145 150 155 160

Pro Val Pro Pro Pro Leu Asn Leu Pro Thr Asp Arg Pro Arg Ser Ala  
165 170 175

Thr Gly Leu Asp Ser Glu Gly Ala Thr His Ser Gln Arg Val Pro Thr  
180 185 190

Glu Gln Ala Leu Arg Leu Arg Glu Phe Ala Arg Ala Gln Gln Val Ser  
195 200 205

Leu Pro Thr Val Leu Leu Gly Leu Tyr Tyr Ala Leu Leu His Arg His  
210 215 220

Thr Arg Gln Asp Asp Val Val Val Gly Ile Pro Thr Met Gly Arg Pro  
225 230 235 240

Arg Ala Glu Leu Ala Thr Ala Ile Gly Tyr Phe Val Asn Val Met Ala  
245 250 255

Val Arg Ala Arg Gly Leu Gly Gln His Ser Phe Gly Ser Leu Leu Arg  
260 265 270

His Leu His Asp Ser Val Ile Asp Gly Leu Glu His Ala His Tyr Pro  
275 280 285

Phe Pro Arg Val Val Lys Asp Leu Arg Leu Ser Asn Gly Pro Glu Glu  
290 295 300

Ala Pro Gly Phe Gln Thr Met Phe Thr Phe Gln Ser Leu Gln Leu Thr  
305 310 315 320

Ser Ala Pro Pro Arg Pro Glu Pro Arg Ser Gly Gly Leu Pro Glu Leu  
325 330 335

Glu Pro Leu Asp Cys Val His Gln Glu Gly Ala Tyr Pro Leu Glu Leu  
340 345 350

Glu Val Val Glu Gly Ala Lys Gly Leu Thr Leu His Phe Lys Tyr Asp  
355 360 365

Ala Arg Leu Tyr Glu Ala Asp Thr Val Glu Arg Met Ala Arg Gln Leu  
370 375 380

~~Residues~~

Leu	Arg	Ala	Ala	Asp	Gln	Val	Ala	Asp	Gly	Val	Glu	Ser	Pro	Leu	Ser	
385					390					395					400	
Ala	Leu	Ser	Trp	Leu	Asp	Asp	Glu	Glu	Arg	Arg	Thr	Leu	Leu	Arg	Asp	
				405					410					415		
Trp	Asn	Ala	Thr	Ala	Thr	Pro	Phe	Leu	Glu	Asp	Leu	Gly	Val	His	Glu	
			420					425					430			
Leu	Phe	Gln	Arg	Gln	Ala	Arg	Glu	Thr	Pro	Asp	Ala	Met	Ala	Val	Ser	
		435					440					445				
Tyr	Glu	Gly	His	Ser	Leu	Ser	Tyr	Gln	Ala	Leu	Asp	Thr	Arg	Ser	Arg	
	450					455					460					
Glu	Ile	Ala	Ala	His	Leu	Lys	Ser	Phe	Gly	Val	Lys	Pro	Gly	Ala	Leu	
465					470					475					480	
Val	Gly	Ile	Tyr	Leu	Asp	Arg	Ser	Ala	Glu	Leu	Val	Ala	Ala	Met	Leu	
				485					490					495		
Gly	Val	Leu	Ser	Ala	Gly	Ala	Ala	Tyr	Val	Pro	Leu	Asp	Pro	Val	His	
			500					505					510			
Pro	Glu	Asp	Arg	Leu	Arg	Tyr	Met	Leu	Glu	Asp	Ser	Gly	Val	Val	Val	
		515					520					525				
Val	Leu	Ala	Arg	Gln	Ala	Ser	Arg	Asp	Lys	Val	Ala	Ala	Ile	Ala	Gly	
	530					535					540					
Ala	Ser	Cys	Lys	Val	Cys	Val	Leu	Glu	Asp	Val	Lys	Ala	Gly	Ala	Thr	
545					550					555					560	
Ser	Ala	Pro	Ala	Gly	Thr	Ser	Pro	Asn	Gly	Leu	Ala	Tyr	Val	Ile	Tyr	
				565					570					575		
Thr	Ser	Gly	Ser	Thr	Gly	Arg	Pro	Lys	Gly	Val	Met	Ile	Pro	His	Arg	
			580					585					590			
Gly	Val	Val	Asn	Phe	Leu	Leu	Cys	Met	Arg	Arg	Thr	Leu	Gly	Leu	Lys	
		595					600					605				
Arg	Thr	Asp	Ser	Leu	Leu	Ala	Val	Thr	Thr	Tyr	Cys	Phe	Asp	Ile	Ala	
	610					615					620					
Ala	Leu	Glu	Leu	Leu	Leu	Pro	Leu	Cys	Ala	Gly	Ala	Gln	Val	Ile	Ile	
625					630					635					640	

~~Residue~~

Ala	Ser	Ala	Glu	Thr	Val	Arg	Asp	Ala	Gln	Ala	Leu	Lys	Arg	Ala	Leu	
				645					650					655		
Arg	Thr	His	Arg	Pro	Thr	Leu	Met	Gln	Ala	Thr	Pro	Ala	Thr	Trp	Thr	
			660					665					670			
Leu	Leu	Phe	Gln	Ser	Gly	Trp	Glu	Asn	Ala	Glu	Arg	Val	Arg	Ile	Leu	
		675					680					685				
Cys	Gly	Gly	Glu	Ala	Leu	Pro	Glu	Ser	Leu	Lys	Ala	His	Phe	Val	Arg	
	690					695					700					
Thr	Ala	Ser	Asp	Val	Trp	Asn	Met	Phe	Gly	Pro	Thr	Glu	Thr	Thr	Ile	
705					710					715					720	
Trp	Ser	Thr	Met	Ala	Lys	Val	Ser	Ala	Ser	Arg	Pro	Val	Thr	Ile	Gly	
				725					730					735		
Lys	Pro	Ile	Asp	Asn	Thr	Gln	Val	Tyr	Val	Leu	Asp	Asp	Arg	Met	Gln	
			740					745					750			
Pro	Val	Pro	Ile	Gly	Val	Pro	Gly	Glu	Leu	Trp	Ile	Ala	Gly	Ala	Gly	
		755					760					765				
Val	Ala	Cys	Gly	Tyr	Leu	Asn	Arg	Pro	Ala	Leu	Thr	Ala	Glu	Arg	Phe	
	770					775					780					
Val	Ser	Asn	Pro	Phe	Thr	Pro	Gly	Thr	Thr	Leu	Tyr	Arg	Thr	Gly	Asp	
785					790					795					800	
Leu	Ala	Arg	Trp	Arg	Ala	Asp	Gly	Glu	Val	Glu	Tyr	Leu	Gly	Arg	Leu	
				805					810					815		
Asp	His	Gln	Val	Lys	Val	Arg	Gly	Phe	Arg	Ile	Glu	Met	Gly	Glu	Ile	
			820					825					830			
Glu	Ala	Gln	Leu	Ala	Gly	His	Pro	Ser	Val	Lys	Asn	Cys	Ala	Val	Val	
		835					840					845				
Ala	Lys	Glu	Leu	Asn	Gly	Thr	Ser	Gln	Leu	Val	Ala	Tyr	Cys	Gln	Pro	
	850					855					860					
Ala	Gly	Thr	Ser	Phe	Asp	Glu	Glu	Ala	Ile	Arg	Ala	His	Leu	Arg	Lys	
865					870					875					880	
Phe	Leu	Pro	Asp	Tyr	Met	Val	Pro	Ala	His	Val	Phe	Ala	Val	Asp	Ala	
				885					890					895		

~~Random~~

Ile Pro Leu Ser Gly Asn Gly Lys Val Asp Arg Gly Gln Leu Met Ala  
900 905 910

Arg Pro Val Val Thr Arg Arg Lys Thr Ser Ala Val His Ala Arg Ser  
915 920 925

Pro Val Glu Ala Thr Leu Val Glu Leu Trp Lys Asn Val Leu Gln Val  
930 935 940

Asn Glu Val Gly Val Glu Asp Arg Phe Phe Glu Val Gly Gly Asp Ser  
945 950 955 960

Val Leu Ala Ala Val Leu Val Glu Glu Met Asn Arg Arg Phe Asp Thr  
965 970 975

Arg Leu Ala Val Thr Asp Leu Phe Lys Tyr Val Asn Ile Arg Asp Met  
980 985 990

Ala Arg His Met Glu Gly Ala Thr Ala Gln Ala Arg Thr Gly Ala Thr  
995 1000 1005

Glu Pro Ala Arg Glu Asp Thr Ala Ser Glu Arg Asp Tyr Glu Gly Ser  
1010 1015 1020

Leu Ala Val Ile Gly Ile Ser Cys Gln Leu Pro Gly Ala Ala Asp Pro  
1025 1030 1035 1040

Trp Arg Phe Trp Lys Asn Leu Arg Glu Gly Arg Asp Ser Val Val Ala  
1045 1050 1055

Tyr Arg His Glu Glu Leu Arg Glu Leu Gly Val Pro Glu Glu Val Leu  
1060 1065 1070

Arg Asp Ser Arg Tyr Val Ala Val Arg Ser Ser Ile Glu Asp Lys Glu  
1075 1080 1085

Cys Phe Asp Pro His Phe Phe Gly Leu Thr Ala Arg Asp Ala Ser Phe  
1090 1095 1100

Met Asp Pro Gln Phe Arg Leu Leu Leu Met His Ala Trp Lys Ala Val  
1105 1110 1115 1120

Glu Asp Ala Ala Thr Thr Pro Glu Arg Leu Gly Pro Cys Gly Val Phe  
1125 1130 1135

Met Thr Ala Ser Asn Ser Phe Tyr His Gln Gly Ser Pro Gln Phe Pro  
1140 1145 1150

~~Peptides~~

Ala Asp Gly Gln Pro Val Leu Arg Thr Ala Glu Glu Tyr Val Leu Trp  
1155 1160 1165

Val Leu Ala Gln Ala Gly Ser Ile Pro Thr Met Val Ser Tyr Lys Leu  
1170 1175 1180

Gly Leu Lys Gly Pro Ser Leu Phe Val His Thr Asn Cys Ser Ser Ser  
1185 1190 1195 1200

Leu Ser Ala Leu Tyr Val Ala Gln Gln Ala Ile Ala Ala Gly Asp Cys  
1205 1210 1215

Gln Thr Ala Leu Val Gly Ala Ala Thr Val Phe Pro Ser Ala Asn Leu  
1220 1225 1230

Gly Tyr Leu His Gln Arg Gly Leu Asn Phe Ser Ser Ala Gly Arg Val  
1235 1240 1245

Lys Ala Phe Asp Ala Ala Ala Asp Gly Met Ile Ala Gly Glu Gly Val  
1250 1255 1260

Ala Val Leu Val Val Lys Asp Ala Ala Ala Val Arg Asp Gly Asp  
1265 1270 1275 1280

Pro Ile Tyr Cys Leu Val Arg Lys Val Gly Ile Asn Asn Asp Gly Gln  
1285 1290 1295

Asp Lys Val Gly Leu Tyr Ala Pro Ser Ala Thr Gly Gln Ala Glu Val  
1300 1305 1310

Ile Arg Arg Leu Phe Asp Arg Thr Gly Ile Asp Pro Ala Ser Ile Gly  
1315 1320 1325

Tyr Val Glu Ala His Gly Thr Gly Thr Leu Leu Gly Asp Pro Val Glu  
1330 1335 1340

Val Ser Ala Leu Ser Glu Ala Phe Arg Thr Phe Thr Asp Arg Arg Gly  
1345 1350 1355 1360

Tyr Cys Arg Leu Gly Ser Val Lys Ser Asn Leu Gly His Leu Asp Thr  
1365 1370 1375

Val Ala Gly Leu Ala Gly Leu Ile Lys Thr Ala Leu Ser Leu Arg Gln  
1380 1385 1390

Gly Glu Val Pro Pro Thr Leu His Val Thr Gln Val Asn Pro Lys Leu  
1395 1400 1405

~~Revised~~

Glu Leu Thr Asp Ser Pro Phe Val Ile Ala Asp Arg Leu Ala Pro Trp  
1410 1415 1420

Pro Ser Leu Pro Gly Pro Arg Arg Ala Ala Val Ser Ala Phe Gly Leu  
1425 1430 1435 1440

Gly Gly Thr Asn Thr His Ala Ile Leu Glu His Tyr Pro Arg Asp Ser  
1445 1450 1455

Arg Pro Arg Glu Arg Ser Gln Arg Ser Asn Ala Val Arg Ala Val Ala  
1460 1465 1470

Pro Phe Ser Ala Arg Thr Leu Glu Ala Leu Lys Asp Asn Leu Arg Ala  
1475 1480 1485

Leu Leu Asp Phe Leu Glu Asp Pro Ala Ser Ala Glu Val Ala Leu Ala  
1490 1495 1500

Asp Ile Thr Tyr Thr Leu Gln Val Gly Arg Val Ala Met Pro Glu Arg  
1505 1510 1515 1520

Met Val Val Thr Ala Ser Thr Arg Asp Glu Leu Val Glu Gly Leu Arg  
1525 1530 1535

Arg Gly Ile Ala Thr Val Gly Gly Ala His Val Gly Thr Val Val Asp  
1540 1545 1550

Thr Ser Pro Ser Val Asp Ala Asp Ala Arg Ala Val Ala Glu Ala Trp  
1555 1560 1565

Ala Thr Gly Asp Ser Ile Asp Trp Asp Ser Leu His Gly Asp Val Lys  
1570 1575 1580

Pro Ala Arg Val Ser Leu Pro Thr Tyr Gln Phe Ala Lys Glu Arg Tyr  
1585 1590 1595 1600

Gly Leu Ser Pro Ala His Ser Val Ala Asn Ser Ser Lys Thr His Pro  
1605 1610 1615

Asp Ala Gly Val Pro Leu Phe Val Pro Thr Trp Gln Pro Trp Ser Glu  
1620 1625 1630

Gly Ala Ser Asn Ala Ser Leu Ala Leu Arg His Leu Val Val Leu Cys  
1635 1640 1645

Glu Pro Leu Asp Ala Leu Gly Ala Glu Gly Ala Ser Ala Leu Ala Ser  
1650 1655 1660

~~Residue~~

Thr Leu Ala Asp Arg Arg Ile Glu Val Val Arg Thr Ser Ser Pro Ser  
1665 1670 1675 1680

Ala Arg Leu Asp Ala Arg Phe Met Ala His Ala Ser Ala Val Phe Glu  
1685 1690 1695

Arg Val Lys Ala Leu Leu Ser Glu Arg Leu Thr Ala Pro Val Thr Leu  
1700 1705 1710

Gln Val Leu Val Pro Glu Glu Arg Asp Ala Leu Ala Leu Ser Gly Leu  
1715 1720 1725

Gly Ser Leu Leu Arg Ser Val Ser Gln Glu Asn Pro Leu Val Arg Gly  
1730 1735 1740

Gln Leu Ile Arg Val Gln Gly Ser Val Ser Ala Ser Ala Leu Val Asp  
1745 1750 1755 1760

Val Leu Val Lys Ser Ala Arg Ala Gly Asp Val Thr Asp Ser Arg Tyr  
1765 1770 1775

His Ala Gly Gln Leu Ser Arg Cys Glu Trp Arg Glu Ala Arg Val Ala  
1780 1785 1790

Lys Gly Asp Ala Ser Arg Phe Trp Arg Glu Asp Gly Val Tyr Val Ile  
1795 1800 1805

Ser Gly Gly Thr Gly Ala Leu Ala Arg Leu Phe Val Ala Glu Ile Gly  
1810 1815 1820

Lys Arg Ala Thr Arg Ala Thr Val Ile Leu Val Ala Arg Ala Ser Ser  
1825 1830 1835 1840

Ala Glu Ala Val Asp Gly Gly Asn Gly Leu Arg Val Arg His Leu Pro  
1845 1850 1855

Val Asp Val Thr Gln Pro Asn Asp Val Asn Ala Phe Val Ala Thr Val  
1860 1865 1870

Leu Arg Glu His Gly Arg Ile Asp Gly Val Ile His Ala Ala Gly Ile  
1875 1880 1885

Arg Arg Asp Asn Tyr Leu Leu Asn Lys Pro Val Ala Glu Met Gln Ala  
1890 1895 1900

Val Leu Ala Pro Lys Val Val Gly Leu Val Asn Leu Asp His Ala Thr  
1905 1910 1915 1920

~~Residue~~

Arg Glu Leu Pro Leu Asp Phe Phe Val Thr Phe Ser Ser Leu Ala Ala  
1925 1930 1935

Phe Gly Asn Ala Gly Gln Ser Asp Tyr Ala Ala Ala Asn Gly Phe Met  
1940 1945 1950

Asp Gly Phe Ala Glu Ser Arg Ala Ala Leu Val Asn Ala Gly Gln Arg  
1955 1960 1965

Gln Gly Arg Thr Val Ser Ile Arg Trp Pro Leu Trp Glu Asn Gly Gly  
1970 1975 1980

Met Gln Leu Asp Ser Arg Ser Arg Glu Val Leu Met Gln Arg Thr Gly  
1985 1990 1995 2000

Met Ala Ala Leu Gly Asp Glu Ala Gly Leu Gly Ala Phe Tyr Arg Ala  
2005 2010 2015

Leu Glu Leu Gly Ser Pro Gly Val Ala Val Trp Thr Gly Glu Ala Gln  
2020 2025 2030

Arg Phe Arg Glu Leu Ser Val Ser Val Ser Pro Ala Pro Pro Pro His  
2035 2040 2045

Gln Val Ala Leu Asp Ala Val Val Ser Ile Thr Glu Lys Val Glu Thr  
2050 2055 2060

Lys Leu Lys Ala Leu Phe Ser Glu Val Thr Arg Tyr Glu Glu Arg Arg  
2065 2070 2075 2080

Ile Asp Ala Arg Gln Pro Met Glu Arg Tyr Gly Ile Asp Ser Ile Ile  
2085 2090 2095

Ile Thr Gln Met Asn Gln Ala Leu Glu Gly Pro Tyr Asn Ala Leu Ser  
2100 2105 2110

Lys Thr Leu Phe Phe Glu Tyr Arg Thr Leu Ala Glu Val Ser Gly Tyr  
2115 2120 2125

Leu Ala Glu His Arg Ala Glu Glu Ser Ala Lys Trp Val Ala Ala Pro  
2130 2135 2140

Gly Glu Asn Ser Ser Ser Val Ile Gln Glu Ala Arg Pro Pro Arg Ala  
2145 2150 2155 2160

Asp Ala Thr His Arg Ala Pro Arg Ala Asp Glu Pro Ile Ala Val Ile  
2165 2170 2175

~~Residue~~

Gly Met Ser Gly Arg Tyr Pro Gly Ala Glu Asn Leu Thr Glu Phe Trp  
2180 2185 2190

Glu Arg Leu Ser Arg Gly Asp Asp Cys Ile Thr Glu Ile Pro Pro Glu  
2195 2200 2205

Arg Trp Ser Leu Asp Gly Phe Phe Tyr Pro Asp Lys Lys His Ala Ala  
2210 2215 2220

Ala Arg Gly Met Ser Tyr Ser Lys Trp Gly Gly Phe Leu Gly Gly Phe  
2225 2230 2235 2240

Ala Asp Phe Asp Pro Leu Phe Phe Asn Ile Ser Pro Arg Glu Ala Thr  
2245 2250 2255

Ser Met Asp Pro Gln Glu Arg Leu Phe Leu Gln Ser Cys Trp Glu Val  
2260 2265 2270

Leu Glu Asp Ala Gly Tyr Thr Arg Asp Ser Leu Ala Gln Arg Phe Gly  
2275 2280 2285

Ser Ala Val Gly Val Phe Ala Gly Ile Thr Lys Thr Gly Tyr Glu Leu  
2290 2295 2300

Tyr Gly Ala Glu Leu Glu Gly Arg Asp Ala Ser Val Arg Pro Tyr Thr  
2305 2310 2315 2320

Ser Phe Ala Ser Val Ala Asn Arg Val Ser Tyr Leu Leu Asp Leu Lys  
2325 2330 2335

Gly Pro Ser Met Pro Val Asp Thr Met Cys Ser Ala Ser Leu Thr Ala  
2340 2345 2350

Val His Met Ala Cys Glu Ala Leu Gln Arg Gly Ala Cys Val Met Ala  
2355 2360 2365

Ile Ala Gly Gly Val Asn Leu Tyr Val His Pro Ser Ser Tyr Val Ser  
2370 2375 2380

Leu Ser Gly Gln Gln Met Leu Ser  
2385 2390

<210> 2

<211> 7178

<212> DNA

<213> Myxococcus xanthus

~~Revised~~

<400> 2

gtcgacccgg cgaggctgac ccgggcctgg gaaggactgc tcgaacggta tccgctgctc 60  
gctggcgcgga ttcgcgtcga aggcacggag ccggtcatcg tccccagtgg gcaggtctcc 120  
gccgaggtcc acgaggttcc atcggctctcc gattcagcac tgggtggcgac cctgcgcgcc 180  
tccgcgaagg tgccattcga tctcgctctg ggaccgctcg ctcggtgca cctgtactcg 240  
cggtcggagc acgagcatgt cctgctgctg tgcttccacc acctggtgct cgatggggca 300  
tccgtggcgc ccttgctcga cgccctccgg gagcgttacg ccgggaccga ggccaaggcg 360  
gggctgctcg aggttccgat cgtcgctcct taccgcgccg ccgtggagtg ggagcagctc 420  
gccattggag gcgatgaggg acggcgccac ctcgactact ggcggcacgt gttggccacg 480  
cccgttctc cgccgttgaa tcttccaacg gaccggcctc gctccgccac ggggctggac 540  
tcggagggag caacgcactc gcagaggggtg cccaccgagc aagcattgcg actgcgcgag 600  
ttcgctcggg cacagcaagt gagcctgccg accgtcctgc tcgggctcta ctacgccttg 660  
cttcatcggc acacgcgcca ggacgacgtg gtggtcggca tccccaccat ggggcggccc 720  
cgggcggaac tggcgacggc gattgggtac ttcgtaacg tgatggccgt gcgcgcgcgg 780  
ggcctggggc agcactcggt cggctcgctg ctgcgccacc tccacgactc ggtcatcgat 840  
ggcctggagc atgcccacta tcccttcccg cgagtgggtga aggacctccg gctgtcgaat 900  
gggcccagg aggcgcctgg cttccagacg atgttcacct tccagagcct gcaactgacg 960  
agcgtccgc caaggccgga gccaggtcg ggcgggttgc cggagcttga gccgctcgac 1020  
tgcgtccatc aggaaggcgc ctaccgctg gagcttgaag tgggtggagg cgccaagggc 1080  
ctcacgctgc atttcaagta cgacgcgcgg ctgtacgagg cggacacggt cgaacggatg 1140  
gcgcgtcagt tgttgcgcgc cgcggaccag gtcgcggatg ggggtggagt tccgctgagc 1200  
gactgtcgt ggctcgacga cgaagagcgc cgcacgcttc tccgcgactg gaatgccacg 1260  
gccacgccgt tctcagagga cctgggcgtt cacgagctct tccagcggca ggcccgggag 1320  
accccagacg ccatggctgt gagctacgag gggcactcgc tcagctatca ggcgctggat 1380

~~Reference~~

acgcggagcc gcgagattgc ggcgcacctg aagagcttcg gcgtcaagcc tggggcgctc 1440  
gtgggcatct acctggaccg gtccgcggag ctggtggcgg cgatgctggg tgtgctgtcc 1500  
gctggcgcg gcttacgtacc cctggacccg gtgcaccccg aggaccggct gcggtacatg 1560  
ctggaggaca gtggcgtggt ggtcgtgctg gcccgtcagg cctcgcgga caaggtcgcc 1620  
gccattgccg gagcctcctg caaggtgtgc gtgctggagg acgtcaaggc tggagccacg 1680  
tccgcgccgg cggaacctc accgaacgga cttgcctacg tcatctacac gtccgggagc 1740  
acggggccggc ccaagggcgt gatgattccc catcgcgggg tggccaactt cctcctgtgc 1800  
atgcgcagga cgctgggcct gaagcgcacg gattcgctgt tggcggtcac gacgtactgc 1860  
ttcgacatcg cggcgctcga gctcctgctt ccgctgtgtg cgggggcgca ggtcatcatc 1920  
gcgtcggcgg agacggttcg ggatgcgcag gcgttgaagc gggcgctgcg caccatcgg 1980  
cccacgttga tgcaggcgac gccgcgcacc tggacactgt tgttccagtc tggctgggag 2040  
aacgccgagc gggttcgaat cctctgcggt ggagaagcgc tgccggagtc gctcaaggcc 2100  
cacttcgttc gcaccgcgag cgacgtgtgg aacatgttcg ggcccaccga gacgaccatc 2160  
tggtcgacga tggcgaaggt ctcggcctcg cgtccggtca ccattggaaa gccgatcgac 2220  
aacacgcagg tctacgtgct ggacgaccgg atgcagccgg tgcccatcgg tgtgccgggc 2280  
gagctgtgga ttgcgggcgc gggcgtggcc tgcggttacc tcaaccggcc ggcgctgacc 2340  
gccgagcgct tcgtttccaa tccgttcacg ccgggcacga cgctctaccg gacgggggac 2400  
ctggcgcgct ggcgcgctga cggtgaggtt gagtacctgg ggcggctcga ccaccaggtg 2460  
aaggtgcgcg gcttccgcat cgagatgggg gagattgaag cgcagttggc cgggcatccc 2520  
agcgtgaaga actgtgccgt ggtggccaag gagctgaacg gcacctcgca gctcgtcgcc 2580  
tactgtcagc ccgcgggaac gagcttcgat gaggaagcca tccgtgcaca cctgcggaag 2640  
ttcctccccg actacatggt cccgcgcac gtcttcgcgg tggatgcgat tccgctgtcg 2700  
ggcaatggca aggtggaccg gggccagctg atggccaggc cggtggtcac ccggcggaag 2760  
acatccgcgg tccatgcccg ttgcctggtt gaggccaccc tcgtcgagct gtggaagaac 2820

~~Resonance~~

gtgctccagg tcaacgaggt ggggtgtcgag gatcgcttct tcgaagtggg gggggactcc 2880  
gtgctggccg ccgtgctggt ggaggagatg aaccggcgct tcgacacgcg gctcgccgctc 2940  
accgacctgt tcaagtacgt caatattcgc gacatggcgc gccacatgga gggcgcgacg 3000  
gcgcaagccc gtactggggc caccgagccg gctcgcgagg acaccgcgctc ggagcgtgac 3060  
tacgagggca gcctggccgt catcggcatc tcctgtcagt tgcccggagc cgcggacccc 3120  
tggcgcttct ggaagaacct gcgagagggc agggacacgcg tgggtggcgta ccgccatgag 3180  
gaactgcgcg agctgggctg gcccgaggag gtcctccgcg attcccgtta cgtcgcggtc 3240  
cggtcgtcca tcgaagacaa ggagtgcctc gacccgcatt tcttcggtct gacggcgcg 3300  
gacgcgtcct tcatggaccc gcagttccga ctgttgctga tgcacgcctg gaaggcagtg 3360  
gaagacgcgg cgacgacgcc tgagcgcctg ggaccgtgcg gcgtcttcat gacggccagc 3420  
aacagcttct atcaccaggg ctgcgccaa tttcctgcgg acgggcagcc ggtcctccgc 3480  
accgccgaag aatacgtgct gtgggtgctg gcccaggcag gctccatccc gacgatgggt 3540  
tcstacaagc tcggcttgaa ggggccgagc ctgttcgtcc acaccaactg ctcgatcatcc 3600  
ctgtccgcgc tgtacgtggc tcagcaggcc atcgcagcgg gagactgcca gacggcgctg 3660  
gtggggggccg ccacggtctt cccttcggcg aacttgggtt atctgcacca gcgggggctc 3720  
aacttctcca gcgcggggcg ggtcaaggcc ttcgacgccg cggcggacgg catgattgcc 3780  
ggtgaagggtg tcgccgtgct ggtggtgaag gacgccgcag cggcgggtgcg cgatggcgac 3840  
ccaatctact gcctcgtgcg gaaggtgggg atcaacaacg acggccagga caaggtgggt 3900  
ttatacggc cgagcgccac cgggcaggcg gaggtcatcc ggcgtctgtt cgaccggacc 3960  
ggcatcgacc ctgcatcgat tggctacgtc gagggccatg gcaccggaac cttgctgggt 4020  
gaccctgtcg aggtctccgc gctgagcgaa gccttcggga ccttcaccga ccggcgcg 4080  
tactgccggc tgggctcggg gaagtcgaac ctgggccatc tggacacagt ggctggactg 4140  
gctgggctca tcaagacggc gctgagcctg cggcagggcg aagttcctcc gacgctccat 4200  
gtgaccaggg tgaatccgaa gctcgagctg acggattcgc cgttcgtcat cgccgaccgt 4260

~~Accession~~

ttggcgccgt ggccgtccct gccgggaccg aggcgggcgg ccgtgagtgc gttcggcctt 4320  
ggcgggacga atacccacgc cattctcgaa cactaccgcg gcgactcccg cccacgggag 4380  
aggagccagc ggtcgaacgc agtccgtgcg gtggctccat tctcggcgcg caccctggag 4440  
gcgttgaagg acaacctccg cgcgctgctc gacttcctgg aggacccggc gtccgcggag 4500  
gtggcgctcg cggacatcac ctacacgttg caggtcggcc gggtcgcat gcctgagcgg 4560  
atggtggtga ctgcgtcgac gcgcgacgaa ttggtggagg gactgcggcg aggcatcgcg 4620  
acggtgggag gtgcccacgt gggaacggtg gtcgatacgt caccacgcgt ggatgccgat 4680  
gctcgggcag ttgcggaggc gtgggcgacg ggcgactcga ttgactggga ttcgctgcac 4740  
ggtgacgtga agcccgcccg tgtcagcctg cccacgtatc agttcgcgaa ggagcgctac 4800  
gggttgctgc ccgcgcactc cgtggcgaat tcctccaaga cgcatactga cgcgggtgtc 4860  
ccgtctctcg ttccgacctg gcagccgtgg tctgagggcg cgtcaaatagc ctcggtggcg 4920  
ctccggcacc tgggtggtgtt gtgcgagcct cttgatgcgc tgggggctga aggtgcctcc 4980  
gcgctggcga gcacgctcgc ggacaggcgc atcgaagtgg tcaggacgtc cagcccaagt 5040  
gcgcggctgg acgcgcggtt catggcgcat gcctcggcgg tcttcgaacg cgtcaaggcg 5100  
ctgctgtcgg agcgtctgac cgctcctgtg acattgcagg tgctggtgcc agaggagcgg 5160  
gatgcgctgg cactgagtgg cctggggagc ctgctgcgtt cgggtgtcga ggagaatccg 5220  
ttggtccggg ggcagctcat ccgcgtccag ggaagcgtct ccgcatcggc gctggtggac 5280  
gttctggtga agtccgcgcg cgccggtgac gtcaccgatt cgcggtacca cgcgggccag 5340  
ctttctcgct gtgagtggcg cgaggcacgt gtcgccaagg gggacgcata ccgcttctgg 5400  
cgcaagacg gcgtctatgt gatttcagga ggaaccggcg ccctggcccg gctgttcgtc 5460  
gccgaaatcg ggaagcgcgc gacgcgggac accgtcatte tggttgcccg cgcatactcg 5520  
gcggaggcgg tggacggtgg gaacgggctg cgcgtgcggc accttcccgt ggatgtcacc 5580  
caaccgaacg acgtgaacgc ctttgctcgt acggtgctgc gcgaacacgg gcgcatcgac 5640  
ggtgtcatcc atgcggcggg catccgccgt gacaactacc tgctcaacaa gccggtggcg 5700

~~Rosenberg~~

gaaatgcagg cggtgctcgc gcccaaggtg gtggggctcg tcaacctgga ccacgccacc 5760  
cgcgagctgc ccctggattt cttcgtcacg ttctcgtccc tggccgcgtt tggaaacgcc 5820  
ggtcagtcgg actacgcggc ggccaatggc ttcattggacg gattcgcgga gtcccagacg 5880  
gcgctcgtga acgccggaca gcggcagggc cggacgggtg ccatccgttg gccgctctgg 5940  
gagaacggcg ggatgcagct cgactcacgg agccgtgagg tcttgatgca gcggaccggg 6000  
atggccgcgc tgggagacga agcgggactg ggggcgttct accgggcgct ggaactgggc 6060  
tcccctggtg tcgcggtgtg gacgggggag gccagaggt ttctgtaact ctccgtgagt 6120  
gtttcgcccc caccgcctcc gcatcaggtg gcgttggacg ccgtggtgtc catcaccgag 6180  
aaggtcgaga cgaagctgaa ggcgctcttc agcgaggtca cgcgatacga agagcgccgc 6240  
atcgatgcc gccagccgat ggagcgctat ggcatcgact ccatcatcat cacgcagatg 6300  
aaccaagccc tcgaagggcc gtacaacgcc ctctcgaaga cgctgttctt cgaataccgg 6360  
acgctcgcgg aagtcagcgg gtatctggcc gagcaccgcg cggaagagag cgcgaagtgg 6420  
gtggcggcac ctggagagaa ttcgtcttcc gtcattccagg aggccaggcc gccacgtgcg 6480  
gatgcgacgc accgggcgcc tcgcgccgac gagcccatcg ccgtcattgg catgagcggc 6540  
cgttatcccc gggcggagaa cctgacggag ttctgggagc gcctgagccg cggtgacgac 6600  
tgcattaccg agattccgcc agagcgctgg tcgttggacg ggttcttcta cccggacaag 6660  
aagcacgccg ccgcgcgggg gatgagctac agcaagtggg gcggcttctt cggcggcttc 6720  
gctgacttcg acccgctgtt cttcaacatc tcgccgcgtg aggcgacgag catggaccgc 6780  
caggagcgct tgttcctgca gagctgctgg gaggtcctgg aggacgcggg gtacacccgg 6840  
gacagcctgg ccagcgctt tggcagcgcg gtgggcgttt tcgcgggaat cacgaagacg 6900  
ggctacgaac tctacggcgc ggagctggaa ggacgagatg cctcgggtccg gccctatacg 6960  
tcgtttgcgt ctgttgccaa ccgcgtctcg tatctgctcg acctgaaggg gccgagcatg 7020  
cccgtggaca ccatgtgctc ggccctcgctg acagccgtcc acatggcttg cgaggcgctg 7080  
caacgaggcg cctgcgtcat ggccatcgcg ggtggagtga atctctacgt ccacccgctg 7140

agctacgtca gcctgtccgg gcagcagatg ctgtcgac

7178

<210> 3

<211> 785

<212> PRT

<213> Myxococcus xanthus

<400> 3

Met Lys Val Val Asn Lys Leu Leu Glu Lys Leu Pro Asp Val Val Ala  
1 5 10 15

Gly Lys Val Pro Asp Val Lys Leu Gln Asp Gln Asp Ile Lys Val Pro  
20 25 30

Leu Ala Gln Gly Thr Phe Thr Glu Glu Lys Ile Leu Pro Pro Lys Leu  
35 40 45

Ala Met His Gly Phe Thr Leu Ser Phe Glu Ala Thr Gly Glu Ala Ser  
50 55 60

Ile Arg Asn Phe Asn Ser Leu Gly Asp Val Asp Glu Asn Gly Ile Ile  
65 70 75 80

Gly Glu Pro Ser Pro Glu Ser Ala Glu Pro Gly Pro Arg Pro Gln Leu  
85 90 95

Leu Leu Gly Ser Asp Ile Gly Trp Met Arg Tyr Gln Val Ser Ala Arg  
100 105 110

Val Lys Ala Ala Val Ser Ala Ser Leu Ser Phe Leu Ala Ser Glu Asn  
115 120 125

Gln Thr Glu Leu Ser Val Thr Leu Ser Asp Tyr Arg Ala His Pro Leu  
130 135 140

Gly Gln Asn Met Arg Glu Ala Val Arg Ser Asp Leu Ser Glu Leu Arg  
145 150 155 160

Leu Met Gln Ala Thr Asp Leu Ala Lys Leu Thr Thr Gly Asp Ala Val  
165 170 175

Ala Trp His Val Arg Gly Ala Leu His Thr Arg Leu Glu Leu Asn Trp  
180 185 190

Ala Asp Ile Phe Pro Thr Asn Leu Asn Arg Leu Gly Phe Leu Arg Gly  
195 200 205

~~Protein~~

Asn Glu Leu Leu Ala Leu Lys Thr Ser Ala Lys Ala Gly Leu Ser Ala  
210 215 220

Arg Val Ser Leu Thr Asp Asp Tyr Gln Leu Ser Phe Ser Arg Pro Arg  
225 230 235 240

Ala Gly Arg Ile Gln Val Ala Val Arg Lys Val Lys Ser His Glu Gln  
245 250 255

Ala Leu Ser Ala Gly Leu Gly Ile Thr Val Glu Leu Leu Asp Pro Ala  
260 265 270

Thr Val Lys Ala Gln Leu Gly Gln Leu Leu Glu Ala Leu Leu Gly Pro  
275 280 285

Val Leu Arg Asp Leu Val Lys Lys Gly Thr Thr Ala Val Glu Ile Met  
290 295 300

Asp Gly Leu Val Asp Lys Ala Ser Lys Ala Lys Leu Asp Asp Asn Gln  
305 310 315 320

Lys Lys Val Leu Gly Leu Val Leu Glu Arg Leu Gly Ile Asp Pro Gln  
325 330 335

Leu Ala Asp Pro Ala Asn Leu Pro Gln Ala Trp Ala Asp Phe Lys Ala  
340 345 350

Arg Val Ala Glu Ser Leu Glu Asn Ala Val Arg Thr Gln Val Ala Glu  
355 360 365

Gly Phe Glu Tyr Glu Tyr Leu Arg Leu Ser Glu Thr Ser Thr Leu Leu  
370 375 380

Glu Val Val Val Glu Asp Val Thr Ala Met Arg Phe His Glu Ser Leu  
385 390 395 400

Leu Lys Gly Asn Leu Val Glu Leu Leu Lys Trp Met Lys Ser Leu Pro  
405 410 415

Ala Gln Gln Ser Glu Phe Glu Leu Arg Asn Tyr Leu His Ala Thr Thr  
420 425 430

Leu Thr Arg Gln Gln Ala Ile Gly Phe Ser Leu Gly Leu Gly Ser Phe  
435 440 445

Glu Leu Leu Lys Ala Lys Asn Val Ser Lys Gln Ser Trp Val Thr Gln  
450 455 460

~~Residue~~

Glu	Asn	Phe	Gln	Gly	Ala	Arg	Arg	Met	Ala	Phe	Leu	Gly	Arg	Arg	Gly	
465					470					475					480	
Tyr	Glu	Asp	Lys	Leu	Leu	Gly	Thr	Arg	Gly	Gln	Trp	Val	Val	Asp	Leu	
				485					490					495		
Lys	Ala	Asp	Met	Thr	Arg	Phe	Ser	Pro	Thr	Pro	Val	Ala	Ser	Asp	Phe	
			500					505					510			
Gly	Tyr	Gly	Leu	His	Leu	Met	Leu	Trp	Gly	Arg	Gln	Lys	Lys	Leu	Ser	
		515					520					525				
Arg	Lys	Asp	Leu	Gln	Gln	Ala	Val	Asp	Asp	Ala	Val	Val	Trp	Gly	Val	
	530					535					540					
Leu	Asp	Ala	Lys	Asp	Ala	Ala	Thr	Val	Ile	Ser	Thr	Met	Gln	Glu	Asp	
545					550					555					560	
Met	Gly	Lys	His	Pro	Ile	Glu	Thr	Arg	Leu	Glu	Leu	Lys	Met	Ala	Asp	
				565					570					575		
Asp	Ser	Phe	Arg	Ala	Leu	Val	Pro	Arg	Ile	Gln	Thr	Leu	Glu	Leu	Ser	
			580					585					590			
Arg	Phe	Ser	Arg	Ala	Leu	Ala	Arg	Ala	Leu	Pro	Trp	Ser	Glu	Gln	Leu	
		595					600					605				
Pro	Arg	Ala	Ser	Ala	Glu	Phe	Arg	Arg	Ala	Val	Tyr	Ala	Pro	Ile	Trp	
	610					615					620					
Glu	Ala	Tyr	Leu	Arg	Glu	Val	Gln	Glu	Gln	Gly	Ser	Leu	Met	Leu	Asn	
625					630					635					640	
Asp	Leu	Ser	Pro	Ser	Arg	Ala	Ala	Gln	Ile	Ala	Lys	Trp	Tyr	Phe	Gln	
				645					650					655		
Lys	Asp	Pro	Thr	Val	Arg	Asp	Leu	Gly	Lys	Asp	Leu	Gln	Leu	Ile	Glu	
			660					665					670			
Ser	Glu	Trp	Arg	Pro	Gly	Gly	Gly	Asn	Phe	Ser	Phe	Ala	Glu	Val	Ile	
		675					680					685				
Ser	Lys	Asn	Pro	Asn	Thr	Leu	Met	Arg	Cys	Arg	Asn	Phe	Val	Ser	Gly	
	690					695					700					
Met	Val	Arg	Leu	Arg	Arg	Ala	Ile	Asp	Glu	Arg	Lys	Ala	Pro	Asp	Glu	
705					710					715					720	

~~Residue~~

Leu Arg Thr Val Phe Gly Glu Leu Glu Gly Met Trp Thr Thr Gly Phe  
725 730 735  
His Leu Arg Ala Ala Gly Ser Leu Leu Ser Asp Leu Ala Gln Ser Thr  
740 745 750  
Pro Leu Gly Leu Ala Gly Val Glu Arg Thr Leu Thr Val Arg Val Ala  
755 760 765  
Asp Ser Glu Glu Gln Leu Val Phe Ser Thr Ala Arg Ser Thr Gly Ala  
770 775 780  
Ala  
785

<210> 4  
<211> 529  
<212> PRT  
<213> Myxococcus xanthus

<400> 4  
Met Pro Ser Gly Cys Tyr Gly Ala Ala Ser Ala Phe Val Leu Pro Pro  
1 5 10 15  
Leu Pro Ala Met Pro Gln Ala Pro Ser Asp Val Ser Gln Val Leu Leu  
20 25 30  
Pro Phe Gly Gly Leu Val Gly Arg Glu Val Asp Leu Asp Ala Phe Leu  
35 40 45  
Gln Thr Leu Met Asp Arg Ile Ala Ile Thr Leu Gln Ala Asp Arg Gly  
50 55 60  
Thr Leu Trp Leu Leu Asp Pro Ala Arg Arg Glu Leu Phe Ser Arg Ala  
65 70 75 80  
Ala His Leu Pro Glu Val Ser Gln Ile Arg Val Lys Leu Gly Gln Gly  
85 90 95  
Val Ala Gly Thr Val Ala Lys Ala Gly His Ala Ile Asn Val Pro Asp  
100 105 110  
Pro Arg Gly Glu Gln Arg Phe Phe Ala Asp Ile Asp Arg Met Thr Gly  
115 120 125  
Tyr Arg Thr Thr Ser Leu Leu Ala Val Pro Leu Arg Asp Gly Asp Gly

~~Residue~~

130						135						140			
Ala	Leu	Tyr	Gly	Val	Leu	Gln	Val	Leu	Asn	Arg	Arg	Gly	Glu	Asp	Arg
145					150				155					160	
Phe	Thr	Asp	Glu	Asp	Thr	Gln	Arg	Leu	Thr	Ala	Ile	Ala	Ser	Gln	Val
				165					170					175	
Ser	Thr	Ala	Leu	Gln	Ser	Thr	Ser	Leu	Tyr	Gln	Glu	Leu	Gln	Arg	Ala
			180					185					190		
Lys	Glu	Gln	Pro	Gln	Val	Pro	Val	Gly	Tyr	Phe	Phe	Asn	Arg	Ile	Ile
		195					200					205			
Gly	Glu	Ser	Pro	Gln	Leu	Gln	Ala	Ile	Tyr	Arg	Leu	Val	Arg	Lys	Ala
	210					215					220				
Ala	Pro	Thr	Asp	Ala	Thr	Val	Leu	Leu	Arg	Gly	Glu	Ser	Gly	Ser	Gly
225					230					235					240
Lys	Glu	Leu	Phe	Ala	Arg	Ala	Val	His	Val	Asn	Gly	Pro	Arg	Arg	Asp
				245					250					255	
Gln	Pro	Phe	Ile	Lys	Val	Asp	Cys	Ala	Ala	Leu	Pro	Ala	Thr	Leu	Ile
			260					265					270		
Glu	Asn	Glu	Leu	Phe	Gly	His	Glu	Arg	Gly	Ala	Phe	Thr	Gly	Ala	Asp
		275					280					285			
His	Arg	Val	Pro	Gly	Lys	Phe	Glu	Ala	Ala	Ser	Gly	Gly	Thr	Val	Phe
	290					295					300				
Ile	Asp	Glu	Ile	Gly	Glu	Leu	Pro	Leu	Pro	Val	Gln	Gly	Lys	Leu	Leu
305					310					315					320
Arg	Val	Ile	Gln	Asp	Arg	Glu	Phe	Glu	Arg	Val	Gly	Gly	Thr	Gln	Ala
				325					330					335	
Val	Lys	Val	Asp	Val	Arg	Ile	Val	Ala	Ala	Thr	His	Arg	Asp	Leu	Ala
			340					345					350		
Arg	Met	Val	Ala	Glu	Gly	Arg	Phe	Arg	Glu	Asp	Leu	Tyr	Tyr	Arg	Ile
	355						360					365			
Lys	Val	Val	Glu	Val	Val	Leu	Pro	Pro	Leu	Arg	Glu	Arg	Gly	Ala	Glu
	370					375					380				
Asp	Ile	Glu	Arg	Leu	Ala	Arg	His	Phe	Val	Ala	Ala	Val	Ala	Arg	Arg

385					390					395					400		
His	Arg	Leu	Thr	Pro	Pro	Arg	Leu	Ser	Ala	Ala	Ala	Val	Glu	Arg	Leu		
				405					410					415			
Lys	Arg	Tyr	Arg	Trp	Pro	Gly	Asn	Val	Arg	Glu	Leu	Glu	Asn	Cys	Ile		
			420					425					430				
Glu	Ser	Ala	Val	Val	Leu	Cys	Glu	Gly	Glu	Ile	Leu	Glu	Glu	His	Leu		
		435					440					445					
Pro	Leu	Pro	Asp	Val	Asp	Arg	Ala	Ala	Leu	Pro	Pro	Pro	Ala	Ala	Ala		
	450					455					460						
Gln	Gly	Val	Asn	Ala	Pro	Thr	Ala	Pro	Ala	Pro	Leu	Asp	Ala	Gly	Leu		
465					470					475					480		
Leu	Pro	Leu	Ala	Glu	Val	Glu	Arg	Arg	His	Ile	Leu	Arg	Val	Leu	Asp		
				485					490					495			
Ala	Val	Lys	Gly	Asn	Arg	Thr	Ala	Ala	Ala	Arg	Val	Leu	Ala	Ile	Gly		
			500					505					510				
Arg	Asn	Thr	Leu	Ala	Arg	Lys	Leu	Lys	Glu	Tyr	Gly	Leu	Gly	Asp	Glu		
		515					520					525					

```
<210> 5
<211> 292
<212> PRT
<213> Myxococcus xanthus
```

Page 21

~~Residue~~

Met	Met	Arg	Glu	Gly	Ala	Pro	Gln	Glu	Ala	Thr	Leu	Phe	Phe	Ser	His
65					70					75					80
Leu	His	Trp	Asp	His	Val	Gln	Gly	Phe	Pro	Phe	Phe	Thr	Pro	Ala	Trp
				85					90					95	
Leu	Pro	Thr	Ser	Glu	Leu	Thr	Leu	Tyr	Gly	Pro	Gly	Ala	Asn	Gly	Ala
			100					105					110		
Gln	Ala	Leu	Gln	Ser	Glu	Leu	Ala	Ala	Gln	Met	Gln	Pro	Leu	His	Phe
	115						120					125			
Pro	Val	Pro	Leu	Ser	Thr	Met	Arg	Ser	Arg	Met	Asp	Phe	Arg	Ser	Ala
	130					135					140				
Leu	His	Ala	Arg	Pro	Val	Glu	Val	Gly	Pro	Phe	Arg	Val	Thr	Pro	Ile
145					150					155					160
Asp	Val	Pro	His	Pro	Gln	Gly	Cys	Leu	Ala	Tyr	Arg	Leu	Glu	Ala	Asp
				165					170					175	
Gly	His	Ser	Phe	Val	Tyr	Ala	Thr	Asp	Val	Glu	Val	Arg	Val	Gln	Glu
			180					185					190		
Leu	Ala	Pro	Glu	Val	Gly	Arg	Leu	Phe	Glu	Gly	Ala	Asp	Val	Leu	Cys
	195						200					205			
Leu	Asp	Ala	Gln	Tyr	Thr	Pro	Asp	Glu	Tyr	Glu	Gly	Arg	Lys	Gly	Val
	210					215					220				
Ala	Lys	Lys	Gly	Trp	Gly	His	Ser	Thr	Met	Met	Asp	Ala	Ala	Gly	Val
225					230					235					240
Ala	Gly	Leu	Val	Gly	Ala	Arg	Arg	Leu	Cys	Leu	Phe	His	His	Asp	Pro
				245					250					255	
Ala	His	Gly	Asp	Asp	Met	Leu	Glu	Asp	Met	Ala	Glu	Gln	Ala	Arg	Ala
			260					265					270		
Leu	Phe	Pro	Val	Cys	Glu	Pro	Ala	Arg	Glu	Gly	Gln	Arg	Leu	Val	Leu
		275					280					285			
Gly	Arg	Ala	Ala												
	290														

<210> 6

<211> 168

~~Resolving~~

<212> PRT

<213> Myxococcus xanthus

<400> 6

Met	Pro	Gly	Pro	Arg	Cys	Ala	Glu	Asn	Asp	Trp	Val	Ala	Leu	Leu	Val
1				5					10					15	
Arg	Val	Asn	His	Glu	Lys	Val	Ala	Ala	Ala	Gln	Leu	Gly	Lys	His	Gly
		20						25					30		
Tyr	Glu	Phe	Phe	Leu	Pro	Thr	Tyr	Thr	Pro	Pro	Lys	Ser	Ser	Gly	Val
		35					40					45			
Lys	Ala	Lys	Leu	Pro	Leu	Phe	Pro	Gly	Tyr	Leu	Phe	Cys	Arg	Tyr	Gln
	50					55					60				
Pro	Leu	Asn	Pro	Tyr	Arg	Ile	Val	Arg	Ala	Pro	Gly	Val	Ile	Arg	Leu
65					70					75					80
Leu	Gly	Gly	Asp	Ala	Gly	Pro	Glu	Ala	Val	Pro	Ala	Gln	Glu	Leu	Glu
				85					90					95	
Ala	Ile	Arg	Arg	Val	Ala	Asp	Ser	Gly	Val	Ser	Ser	Asn	Pro	Cys	Asp
			100						105					110	
Tyr	Leu	Arg	Val	Gly	Gln	Arg	Val	Arg	Ile	Ile	Glu	Gly	Pro	Leu	Thr
		115					120					125			
Gly	Leu	Glu	Gly	Ser	Leu	Val	Thr	Ser	Lys	Ser	Gln	Leu	Arg	Phe	Ile
	130					135					140				
Val	Ser	Val	Gly	Leu	Leu	Gln	Arg	Ser	Val	Ser	Val	Glu	Val	Ser	Ala
145					150					155					160
Glu	Gln	Leu	Glu	Pro	Ile	Thr	Asp								
				165											

<210> 7

<211> 79

<212> PRT

<213> Myxococcus xanthus

<400> 7

Met	Asp	Lys	Arg	Ile	Ile	Phe	Asp	Ile	Val	Thr	Ser	Ser	Val	Arg	Glu
1				5					10					15	
Val	Val	Pro	Glu	Leu	Glu	Ser	His	Pro	Phe	Glu	Pro	Glu	Asp	Asp	Leu

~~Rosenberg~~

20

25

30

Val Gly Leu Gly Ala Asn Ser Leu Asp Arg Ala Glu Ile Val Asn Leu  
35 40 45

Thr Leu Glu Lys Leu Ala Leu Asn Ile Pro Arg Val Glu Leu Ile Asp  
50 55 60

Ala Lys Thr Ile Gly Gly Leu Val Asp Val Leu His Ala Arg Leu  
65 70 75

<210> 8

<211> 420

<212> PRT

<213> Myxococcus xanthus

<400> 8

Met Gly Pro Val Gly Ile Glu Ala Met Asn Ala Tyr Cys Gly Ile Ala  
1 5 10 15

Arg Leu Asp Val Leu Gln Leu Ala Thr His Arg Gly Leu Asp Thr Ser  
20 25 30

Arg Phe Ala Asn Leu Leu Met Glu Glu Lys Thr Val Pro Leu Pro Tyr  
35 40 45

Glu Asp Pro Val Thr Tyr Gly Val Asn Ala Ala Arg Pro Ile Leu Asp  
50 55 60

Gln Leu Thr Ala Ala Glu Arg Asp Ser Ile Glu Leu Leu Val Ala Cys  
65 70 75 80

Thr Glu Ser Ser Phe Asp Phe Gly Lys Ala Met Ser Thr Tyr Leu His  
85 90 95

Gln His Leu Gly Leu Ser Arg Asn Cys Arg Leu Ile Glu Leu Lys Ser  
100 105 110

Ala Cys Tyr Ser Gly Val Ala Gly Leu Gln Met Ala Val Asn Phe Ile  
115 120 125

Leu Ser Gly Val Ser Pro Gly Ala Lys Ala Leu Val Val Ala Ser Asp  
130 135 140

Leu Ser Arg Phe Ser Ile Ala Glu Gly Gly Asp Ala Ser Thr Glu Asp  
145 150 155 160

~~Residue~~

Trp	Ser	Phe	Ala	Glu	Pro	Ser	Ser	Gly	Ala	Gly	Ala	Val	Ala	Met	Leu	165	170	175
Val	Ser	Asp	Thr	Pro	Arg	Val	Phe	Arg	Val	Asp	Val	Gly	Ala	Asn	Gly	180	185	190
Tyr	Tyr	Gly	Tyr	Glu	Val	Met	Asp	Thr	Cys	Arg	Pro	Val	Ala	Asp	Ser	195	200	205
Glu	Ala	Gly	Asp	Ala	Asp	Leu	Ser	Leu	Leu	Ser	Tyr	Leu	Asp	Cys	Cys	210	215	220
Glu	Asn	Ala	Phe	Arg	Glu	Tyr	Thr	Arg	Arg	Val	Pro	Ala	Ala	Asn	Tyr	225	230	235
Ala	Glu	Ser	Phe	Gly	Tyr	Leu	Ala	Phe	His	Thr	Pro	Phe	Gly	Gly	Met	245	250	255
Val	Lys	Gly	Ala	His	Arg	Thr	Met	Met	Arg	Lys	Phe	Ser	Gly	Lys	Asn	260	265	270
Arg	Gly	Asp	Ile	Glu	Ala	Asp	Phe	Gln	Arg	Arg	Val	Ala	Pro	Gly	Leu	275	280	285
Thr	Tyr	Cys	Gln	Arg	Val	Gly	Asn	Ile	Met	Gly	Ala	Thr	Met	Ala	Leu	290	295	300
Ser	Leu	Leu	Gly	Thr	Ile	Asp	His	Gly	Asp	Phe	Ala	Thr	Ala	Lys	Arg	305	310	315
Ile	Gly	Cys	Phe	Ser	Tyr	Gly	Ser	Gly	Cys	Ser	Ser	Glu	Phe	Phe	Ser	325	330	335
Gly	Val	Val	Thr	Glu	Glu	Gly	Gln	Gln	Arg	Gln	Arg	Ala	Leu	Gly	Leu	340	345	350
Gly	Glu	Ala	Leu	Gly	Arg	Arg	Gln	Gln	Leu	Ser	Met	Pro	Asp	Tyr	Asp	355	360	365
Ala	Leu	Leu	Lys	Gly	Asn	Gly	Leu	Val	Arg	Phe	Gly	Thr	Arg	Asn	Ala	370	375	380
Glu	Leu	Asp	Phe	Gly	Val	Val	Gly	Ser	Ile	Arg	Pro	Gly	Gly	Trp	Gly	385	390	395
Arg	Pro	Leu	Leu	Phe	Leu	Ser	Ala	Ile	Arg	Asp	Phe	His	Arg	Asp	Tyr	405	410	415

~~Rossmbs~~

Gln Trp Ile Ser  
420

<210> 9

<211> 325

<212> PRT

<213> Myxococcus xanthus

<400> 9

Met	Ser	Ser	Val	Ala	Thr	Ala	Val	Pro	Leu	Thr	Ala	Arg	Asp	Ser	Ala
1				5					10					15	
Val	Ser	Arg	Arg	Leu	Arg	Ile	Thr	Pro	Ser	Met	Cys	Gly	Gln	Thr	Ser
			20					25					30		
Leu	Phe	Ala	Gly	Gln	Ile	Gly	Asp	Trp	Ala	Trp	Asp	Thr	Val	Ser	Arg
		35					40					45			
Leu	Cys	Gly	Thr	Asp	Val	Leu	Thr	Ala	Thr	Asn	Ala	Ser	Gly	Ala	Pro
	50					55					60				
Thr	Tyr	Leu	Ala	Phe	Tyr	Tyr	Phe	Arg	Ile	Arg	Gly	Thr	Pro	Ala	Leu
65					70					75					80
His	Pro	Gly	Ala	Leu	Arg	Phe	Gly	Asp	Thr	Leu	Asp	Val	Thr	Ser	Lys
				85					90					95	
Ala	Tyr	Asn	Phe	Gly	Ser	Glu	Ser	Val	Leu	Thr	Val	His	Arg	Ile	Cys
			100					105					110		
Lys	Thr	Ala	Glu	Gly	Gly	Ala	Pro	Glu	Ala	Asp	Ala	Phe	Gly	His	Glu
		115					120					125			
Glu	Leu	Tyr	Glu	Gln	Pro	Gln	Pro	Gly	Arg	Ile	Tyr	Ala	Glu	Thr	Phe
	130					135					140				
Asn	Arg	Trp	Ile	Thr	Arg	Ser	Asp	Gly	Lys	Ser	Asn	Glu	Ser	Leu	Ile
145					150					155					160
Lys	Ser	Ser	Pro	Val	Gly	Phe	Gln	Tyr	Ala	His	Leu	Pro	Leu	Leu	Pro
				165					170					175	
Asp	Glu	Tyr	Ser	Pro	Arg	Arg	Ala	Tyr	Gly	Asp	Ala	Arg	Ala	Arg	Gly
			180					185					190		
Thr	Phe	His	Asp	Val	Asp	Ser	Ala	Glu	Tyr	Arg	Leu	Thr	Val	Asp	Arg
		195					200					205			

~~Rosenberg~~

Phe Pro Leu Arg Tyr Ala Val Asp Val Ile Arg Asp Val Asn Gly Val  
210 215 220

Gly Leu Ile Tyr Phe Ala Ser Tyr Phe Ser Met Val Asp Trp Ala Ile  
225 230 235 240

Trp Gln Leu Ala Arg His Gln Gly Arg Ser Glu Gln Ala Phe Leu Ser  
245 250 255

Arg Val Val Leu Asp Gln Gln Leu Cys Phe Leu Gly Asn Ala Ala Leu  
260 265 270

Asp Thr Thr Phe Asp Ile Asp Val Gln His Trp Glu Arg Val Gly Gly  
275 280 285

Gly Glu Glu Leu Phe Asn Val Lys Met Arg Glu Gly Ala Gln Gly Arg  
290 295 300

Asp Ile Ala Val Ala Thr Val Lys Val Arg Phe Asp Ala Ala Ser Glu  
305 310 315 320

Gly Gly Arg Arg Gly  
325

<210> 10

<211> 83

<212> PRT

<213> Myxococcus xanthus

<400> 10

Met Thr Asp Glu Gln Ile Arg Gly Val Val His Gln Ser Ile Val Arg  
1 5 10 15

Val Leu Pro Arg Val Arg Ser Asn Glu Ile Ala Gly His Leu Asn Leu  
20 25 30

Arg Glu Leu Gly Ala Asp Ser Val Asp Arg Val Glu Ile Leu Thr Ser  
35 40 45

Ile Leu Asp Ser Leu Arg Leu Gln Lys Thr Pro Leu Ala Lys Phe Ala  
50 55 60

Asp Ile Arg Asn Ile Asp Ala Leu Val Ala Phe Leu Ala Gly Glu Val  
65 70 75 80

Ala Gly Gly

~~Residue~~

<210> 11

<211> 374

<212> PRT

<213> Myxococcus xanthus

<400> 11

Met	Met	Gln	Glu	Arg	Gly	Val	Ala	Leu	Pro	Phe	Glu	Asp	Pro	Val	Thr
1				5					10					15	

Asn	Ala	Val	Asn	Ala	Ala	Arg	Pro	Ile	Leu	Asp	Ala	Met	Ser	Pro	Glu
			20					25					30		

Ala	Arg	Glu	Arg	Ile	Glu	Leu	Leu	Val	Thr	Ser	Ser	Glu	Ser	Gly	Val
		35					40					45			

Asp	Phe	Ser	Lys	Ser	Ile	Ser	Ser	Tyr	Ala	His	Glu	His	Leu	Gly	Leu
	50					55					60				

Ser	Arg	His	Cys	Arg	Phe	Leu	Glu	Val	Lys	Gln	Ala	Cys	Tyr	Ala	Ala
65					70					75					80

Thr	Gly	Ala	Leu	Gln	Leu	Ala	Leu	Gly	Tyr	Ile	Ala	Ser	Gly	Val	Ser
				85					90					95	

Pro	Gly	Ala	Lys	Ala	Leu	Val	Ile	Ala	Thr	Asp	Val	Thr	Leu	Val	Asp
			100					105					110		

Glu	Ser	Gly	Leu	Tyr	Ser	Glu	Pro	Ala	Met	Gly	Thr	Gly	Gly	Val	Ala
		115					120					125			

Val	Leu	Leu	Gly	Asp	Glu	Pro	Arg	Val	Met	Lys	Met	Asp	Leu	Gly	Ala
	130					135					140				

Phe	Gly	Asn	Tyr	Ser	Tyr	Asp	Val	Phe	Asp	Thr	Ala	Arg	Pro	Ser	Pro
145					150					155					160

Glu	Ile	Asp	Ile	Gly	Asp	Val	Asp	Arg	Ser	Leu	Phe	Thr	Tyr	Leu	Asp
				165					170					175	

Cys	Leu	Lys	His	Ser	Phe	Ala	Ala	Tyr	Gly	Arg	Arg	Val	Asp	Gly	Val
			180					185					190		

Asp	Phe	Val	Ser	Thr	Phe	Asp	Tyr	Leu	Ala	Met	His	Thr	Pro	Phe	Ala
		195					200					205			

~~Rosenberg~~

Gly Leu Val Lys Ala Gly His Arg Lys Met Met Arg Glu Leu Thr Pro  
210 215 220

Cys Asp Val Asp Glu Ile Glu Ala Asp Phe Gly Arg Arg Val Lys Pro  
225 230 235 240

Ser Leu Gln Tyr Pro Ser Leu Val Gly Asn Leu Cys Ser Gly Ser Val  
245 250 255

Tyr Leu Ser Leu Cys Ser Ile Ile Asp Thr Ile Lys Pro Glu Arg Ser  
260 265 270

Ala Arg Val Gly Met Phe Ser Tyr Gly Ser Gly Cys Ser Ser Glu Phe  
275 280 285

Phe Ser Gly Val Ile Gly Pro Glu Ser Val Ser Ala Leu Ala Gly Leu  
290 295 300

Asp Ile Gly Gly His Leu Arg Gly Arg Arg Gln Leu Thr Phe Asp Gln  
305 310 315 320

Tyr Val Glu Leu Leu Lys Glu Asn Leu Arg Cys Leu Val Pro Thr Lys  
325 330 335

Asn Arg Asp Val Asp Val Glu Arg Tyr Leu Pro Leu Val Thr Arg Thr  
340 345 350

Ala Ser Arg Pro Arg Met Leu Ala Leu Arg Arg Val Val Asp Tyr His  
355 360 365

Arg Gln Tyr Glu Trp Val  
370

<210> 12  
<211> 171  
<212> PRT  
<213> Myxococcus xanthus

<400> 12  
Met Asn Thr Pro Ser Leu Thr Asn Trp Pro Ala Arg Leu Gly Tyr Leu  
1 5 10 15

Leu Ala Val Gly Gly Ala Trp Phe Ala Ala Asp Gln Val Thr Lys Gln  
20 25 30

Met Ala Arg Asp Gly Ala Lys Arg Pro Val Ala Val Phe Asp Ser Trp  
35 40 45

~~Rosenberg~~

Trp His Phe His Tyr Val Glu Asn Arg Ala Gly Ala Phe Gly Leu Phe  
50 55 60

Ser Ser Phe Gly Glu Glu Trp Arg Met Pro Phe Phe Tyr Val Val Gly  
65 70 75 80

Ala Ile Cys Ile Val Leu Leu Ile Gly Tyr Tyr Phe Tyr Thr Pro Pro  
85 90 95

Thr Met Lys Leu Gln Arg Trp Ser Leu Ala Thr Met Ile Gly Gly Ala  
100 105 110

Leu Gly Asn Tyr Val Asp Arg Val Arg Leu Arg Tyr Val Val Asp Phe  
115 120 125

Val Ser Trp His Val Gly Asp Arg Phe Tyr Trp Pro Ser Phe Asn Ile  
130 135 140

Ala Asp Thr Ala Val Val Val Gly Ala Ala Leu Met Ile Leu Glu Ser  
145 150 155 160

Phe Arg Glu Pro Arg Gln Gln Leu Ser Pro Gly  
165 170

<210> 13

<211> 475

<212> PRT

<213> Myxococcus xanthus

<400> 13

Met Gly Thr Ser Glu Pro Val Glu Pro Asp His Ala Leu Ser Lys Pro  
1 5 10 15

Pro Pro Val Ala Pro Val Gly Ala Gln Ala Leu Pro Arg Gly Pro Ala  
20 25 30

Met Pro Gly Ile Ala Gln Leu Met Met Leu Phe Leu Arg Pro Thr Glu  
35 40 45

Phe Leu Asp Arg Cys Ala Ala Arg Tyr Gly Asp Thr Phe Thr Leu Lys  
50 55 60

Ile Pro Gly Thr Pro Pro Phe Ile Gln Thr Ser Asp Pro Ala Leu Ile  
65 70 75 80

Glu Val Ile Phe Lys Gly Asp Pro Asp Leu Phe Leu Gly Gly Lys Ala

~~Residue~~

85					90					95					
Asn	Asn	Gly	Leu	Lys	Pro	Val	Val	Gly	Glu	Asn	Ser	Leu	Leu	Val	Leu
		100						105				110			
Asp	Gly	Lys	Arg	His	Arg	Arg	Asp	Arg	Lys	Leu	Ile	Met	Pro	Thr	Phe
		115					120					125			
Leu	Gly	Glu	Arg	Met	His	Ala	Tyr	Gly	Ser	Val	Ile	Arg	Asp	Ile	Val
	130					135					140				
Asn	Ala	Ala	Leu	Asp	Arg	Trp	Pro	Val	Gly	Lys	Pro	Phe	Ala	Val	His
145					150					155					160
Glu	Glu	Thr	Gln	Gln	Ile	Met	Leu	Glu	Val	Ile	Leu	Arg	Val	Ile	Phe
			165						170					175	
Gly	Leu	Glu	Asp	Ala	Arg	Thr	Ile	Ala	Gln	Phe	Arg	His	His	Val	His
			180					185					190		
Gln	Val	Leu	Lys	Leu	Ala	Leu	Phe	Leu	Phe	Pro	Asn	Gly	Glu	Gly	Lys
		195					200					205			
Pro	Ala	Ala	Glu	Gly	Phe	Ala	Arg	Ala	Val	Gly	Lys	Ala	Phe	Pro	Ser
	210					215					220				
Leu	Asp	Val	Phe	Ala	Ser	Leu	Lys	Ala	Ile	Asp	Asp	Ile	Ile	Tyr	Gln
225					230					235					240
Glu	Ile	Gln	Asp	Arg	Arg	Ser	Gln	Asp	Ile	Ser	Gly	Arg	Gln	Asp	Val
				245					250					255	
Leu	Ser	Leu	Met	Met	Gln	Ser	His	Tyr	Asp	Asp	Gly	Ser	Val	Met	Thr
			260					265					270		
Pro	Gln	Glu	Leu	Arg	Asp	Glu	Leu	Met	Thr	Leu	Leu	Met	Ala	Gly	His
		275					280					285			
Glu	Thr	Ser	Ala	Thr	Ile	Ala	Ala	Trp	Cys	Val	Tyr	His	Leu	Cys	Arg
	290					295					300				
His	Pro	Asp	Ala	Met	Gly	Lys	Leu	Arg	Glu	Glu	Ile	Ala	Ala	His	Thr
305					310					315					320
Val	Asp	Gly	Val	Leu	Pro	Leu	Ala	Lys	Ile	Asn	Glu	Leu	Lys	Phe	Leu
				325					330					335	
Asp	Ala	Val	Val	Lys	Glu	Thr	Met	Arg	Ile	Thr	Pro	Val	Phe	Ser	Leu

~~Residue~~

340	345	350
Val Ala Arg 355	Val Leu Lys Glu Pro Gln Thr Ile Gly Gly Thr Thr Tyr 360	365
Pro Ala Asn Val Val Leu Ser 370	Pro Asn Ile Tyr Gly Thr His His Arg 375	380
Ala Asp Leu Trp Gly Asp Pro Lys Val Phe Arg Pro Glu Arg Phe Leu 385	390	395 400
Glu Glu Arg Val Asn Pro Phe His Tyr Phe Pro Phe Gly Gly Gly Ile 405	410	415
Arg Lys Cys Ile Gly Thr Ser Phe Ala Tyr Tyr Glu Met Lys Ile Phe 420	425	430
Val Ser Glu Thr Val Arg Arg Met Arg Phe Asp Thr Arg Pro Gly Tyr 435	440	445
His Ala Lys Val Val Arg Arg Ser Asn Thr Leu Ala Pro Ser Gln Gly 450	455	460
Val Pro Ile Ile Val Glu Ser Arg Leu Pro Ser 465	470	475

<210> 14

<211> 318

<212> PRT

<213> Myxococcus xanthus

<400> 14

Met Val Asp Ser Val Ser Lys Gln Ala Arg Arg Lys Val Phe Leu Phe 1 5 10 15
Ser Gly Gln Gly Thr Gln Ser Tyr Phe Met Ala Lys Glu Leu Phe Asp 20 25 30
Thr Gln Thr Gly Phe Lys Arg Gln Leu Leu Glu Leu Asp Glu Gln Phe 35 40 45
Lys Gln Arg Leu Gly His Ser Ile Leu Glu Arg Ile Tyr Asp Ala Arg 50 55 60
Ala Ala Arg Leu Asp Pro Leu Asp Asp Val Leu Val Ser Phe Pro Ala 65 70 75 80

~~Residue~~

Ile Phe Met Ile Glu His Ala Leu Ala Arg Leu Leu Ile Asp Arg Gly  
85 90 95

Ile Gln Pro Asp Ala Val Val Gly Ala Ser Met Gly Glu Val Ala Ala  
100 105 110

Ala Ala Ile Ala Gly Ala Ile Ser Val Asp Ala Ala Val Ala Leu Val  
115 120 125

Ala Ala Gln Ala Gln Leu Phe Ala Arg Thr Ala Pro Arg Gly Gly Met  
130 135 140

Leu Ala Val Leu His Glu Leu Glu Ala Cys Arg Gly Phe Thr Ser Val  
145 150 155 160

Ala Arg Asp Gly Glu Val Ala Ala Ile Asn Tyr Pro Ser Asn Phe Val  
165 170 175

Leu Ala Ala Asp Glu Ala Gly Leu Gly Arg Ile Gln Gln Glu Leu Ser  
180 185 190

Gln Arg Ser Val Ala Phe His Arg Leu Pro Val Arg Tyr Pro Phe His  
195 200 205

Ser Ser His Leu Asp Pro Leu Arg Glu Glu Tyr Arg Ser Arg Val Arg  
210 215 220

Ala Asp Ser Leu Thr Trp Pro Arg Ile Pro Met Tyr Ser Cys Thr Thr  
225 230 235 240

Ala Asn Arg Val His Asp Leu Arg Ser Asp His Phe Trp Asn Val Val  
245 250 255

Arg Ala Pro Ile Gln Leu Tyr Asp Thr Val Leu Gln Leu Glu Gly Gln  
260 265 270

Gly Gly Cys Asp Phe Ile Asp Val Gly Pro Ala Ala Ser Phe Ala Thr  
275 280 285

Ile Ile Lys Arg Ile Leu Ala Arg Asp Ser Thr Ser Arg Leu Phe Pro  
290 295 300

Leu Leu Ser Pro Ser Pro Ala Ser Thr Gly Ser Ser Met Gly  
305 310 315

<210> 15  
<211> 330

~~Residue~~

<212> PRT

<213> Myxococcus xanthus

<400> 15

Met	Thr	Glu	Ala	Pro	Ala	Pro	Arg	Ala	Pro	Ala	Gln	Val	Pro	Pro	Pro	
1				5					10					15		
Pro	Ser	Ser	Pro	Trp	Ala	Leu	His	Thr	Arg	Gly	Ala	Ala	Ser	Ala	Pro	
			20					25					30			
Val	Asn	Ala	Arg	Lys	Ala	Ala	Leu	Phe	Pro	Gly	Gln	Gly	Ser	Gln	Glu	
		35					40					45				
Arg	Gly	Met	Gly	Ala	Ala	Leu	Phe	Asp	Glu	Phe	Pro	Asp	Leu	Thr	Asp	
	50					55						60				
Ile	Ala	Asp	Ala	Ile	Leu	Gly	Tyr	Ser	Ile	Lys	Arg	Leu	Cys	Leu	Glu	
65					70					75					80	
Asp	Pro	Gly	Lys	Glu	Leu	Ala	Gln	Thr	Gln	Phe	Thr	Gln	Pro	Ala	Leu	
				85					90						95	
Tyr	Val	Val	Asn	Ala	Leu	Ser	Tyr	Leu	Lys	Arg	Leu	Arg	Glu	Gly	Ala	
			100					105						110		
Glu	Gln	Pro	Ala	Phe	Val	Ala	Gly	His	Ser	Leu	Gly	Glu	Tyr	Asn	Ala	
		115					120					125				
Leu	Leu	Val	Ala	Gly	Ala	Phe	Asp	Phe	Glu	Thr	Gly	Leu	Arg	Leu	Val	
	130					135						140				
Lys	Arg	Arg	Gly	Glu	Leu	Met	Ser	Gly	Ala	Ser	Gly	Gly	Thr	Met	Ala	
145					150					155					160	
Ala	Val	Val	Gly	Cys	Asp	Ala	Val	Ala	Val	Glu	Gln	Val	Leu	Arg	Asp	
				165					170					175		
Arg	Gln	Leu	Thr	Ser	Leu	Asp	Ile	Ala	Asn	Ile	Asn	Ser	Pro	Asp	Gln	
			180					185						190		
Ile	Val	Val	Ser	Gly	Pro	Ala	Gln	Asp	Ile	Glu	Arg	Ala	Arg	Gln	Cys	
		195					200					205				
Phe	Val	Asp	Arg	Gly	Ala	Arg	Tyr	Val	Pro	Leu	Asn	Val	Arg	Ala	Pro	
	210					215					220					
Phe	His	Ser	Arg	Tyr	Met	Gln	Pro	Ala	Ala	Ser	Glu	Phe	Glu	Arg	Phe	
225					230					235					240	

~~Rosenby~~

Leu Ser Gln Phe Gln Tyr Ala Pro Leu Arg Cys Val Val Ile Ser Asn  
245 250 255

Val Thr Gly Arg Pro Tyr Ala His Asp Asn Val Val Gln Gly Leu Ala  
260 265 270

Leu Gln Leu Arg Ser Pro Val Gln Trp Thr Ala Thr Val Arg Tyr Leu  
275 280 285

Leu Glu Gln Gly Val Glu Asp Phe Glu Glu Leu Gly Pro Gly Arg Val  
290 295 300

Leu Thr Arg Leu Ile Thr Ala Asn Lys Arg Gly Ala Pro Ala Pro Ala  
305 310 315 320

Thr Ala Ala Pro Ala Lys Trp Ala Asn Ala  
325 330

<210> 16

<211> 417

<212> PRT

<213> Myxococcus xanthus

<400> 16

Met Ser Thr Ser Pro Val Gln Glu Leu Val Val Ser Gly Phe Gly Val  
1 5 10 15

Thr Ser Ala Ile Gly Gln Gly Ala Ala Ser Phe Thr Ser Ala Leu Leu  
20 25 30

Glu Gly Ala Ala Arg Phe Arg Val Met Glu Arg Pro Gly Arg Gln His  
35 40 45

Gln Ala Asn Gly Gln Thr Thr Ala His Leu Gly Ala Glu Ile Ala Ser  
50 55 60

Leu Ala Val Pro Glu Gly Val Thr Pro Gln Leu Trp Arg Ser Ala Thr  
65 70 75 80

Phe Ser Gly Gln Ala Ala Leu Val Thr Val His Glu Ala Trp Asn Ala  
85 90 95

Ala Arg Leu Gln Ala Val Pro Gly His Arg Ile Gly Leu Val Val Gly  
100 105 110

Gly Thr Asn Val Gln Gln Arg Asp Leu Val Leu Met Gln Asp Ala Tyr

~~December~~

115					120					125					
Arg	Glu	Arg	Val	Pro	Phe	Leu	Arg	Ala	Ala	Tyr	Gly	Ser	Thr	Phe	Met
	130					135					140				
Asp	Thr	Asp	Leu	Val	Gly	Leu	Cys	Thr	Gln	Gln	Phe	Ala	Ile	His	Gly
145					150					155					160
Met	Ser	Phe	Thr	Val	Gly	Gly	Ala	Ser	Ala	Ser	Gly	Leu	Leu	Ala	Val
				165					170					175	
Ile	Gln	Ala	Ala	Glu	Ala	Val	Leu	Ser	Arg	Lys	Val	Asp	Val	Cys	Ile
			180					185					190		
Ala	Val	Gly	Ala	Leu	Met	Asp	Val	Ser	Tyr	Trp	Glu	Cys	Gln	Gly	Leu
		195					200					205			
Arg	Ala	Met	Gly	Ala	Met	Gly	Thr	Asp	Arg	Phe	Ala	Arg	Glu	Pro	Glu
	210					215					220				
Arg	Ala	Cys	Arg	Pro	Phe	Asp	Arg	Glu	Ser	Asp	Gly	Phe	Ile	Phe	Gly
225					230					235					240
Glu	Ala	Cys	Gly	Ala	Val	Val	Val	Glu	Ser	Ala	Glu	His	Ala	Arg	Arg
				245					250					255	
Arg	Gly	Val	Thr	Pro	Arg	Gly	Ile	Leu	Ser	Gly	Trp	Ala	Met	Gln	Leu
			260					265					270		
Asp	Ala	Ser	Arg	Gly	Pro	Leu	Ser	Ser	Ile	Glu	Arg	Glu	Ser	Gln	Val
		275					280					285			
Ile	Gly	Ala	Ala	Leu	Arg	His	Ala	Asp	Leu	Ala	Pro	Glu	Arg	Val	Asp
	290					295					300				
Tyr	Val	Asn	Pro	His	Gly	Ser	Gly	Ser	Arg	Gln	Gly	Asp	Ala	Ile	Glu
305					310					315					320
Leu	Gly	Ala	Leu	Lys	Ala	Cys	Gly	Leu	Thr	His	Ala	Arg	Val	Asn	Thr
				325					330					335	
Thr	Lys	Ser	Ile	Thr	Gly	His	Gly	Leu	Ser	Ser	Ala	Gly	Ala	Val	Gly
			340					345					350		
Leu	Ile	Ala	Thr	Leu	Val	Gln	Leu	Glu	Gln	Gly	Arg	Leu	His	Pro	Ser
		355					360					365			
Leu	Asn	Leu	Val	Asp	Pro	Ile	Asp	Ser	Ser	Phe	Arg	Trp	Val	Gly	Ala

~~Residue~~

370		375		380											
Thr	Ala	Glu	Ala	Gln	Ser	Leu	Gln	Asn	Ala	Leu	Val	Leu	Ala	Tyr	Gly
385					390					395					400
Phe	Gly	Gly	Ile	Asn	Thr	Ala	Val	Ala	Val	Arg	Arg	Ser	Ala	Thr	Glu
				405					410					415	

Ser

<210> 17  
<211> 262  
<212> PRT  
<213> Myxococcus xanthus

<400> 17

Met	Gln	Ala	Ala	Ser	Pro	Pro	His	Arg	Asp	Tyr	Gln	Thr	Leu	Arg	Val
1				5					10					15	
Arg	Phe	Glu	Ala	Gln	Thr	Cys	Phe	Leu	Gln	Leu	His	Arg	Pro	Asp	Ala
			20					25					30		
Asp	Asn	Thr	Ile	Ser	Arg	Thr	Leu	Ile	Asp	Glu	Cys	Gln	Gln	Val	Leu
		35					40					45			
Thr	Leu	Cys	Glu	Glu	His	Ala	Thr	Thr	Val	Val	Leu	Glu	Gly	Leu	Pro
	50					55					60				
His	Val	Phe	Cys	Met	Gly	Ala	Asp	Phe	Arg	Ala	Ile	His	Asp	Arg	Val
65					70					75					80
Asp	Asp	Gly	Arg	Arg	Glu	Gln	Gly	Asn	Ala	Glu	Gln	Leu	Tyr	Arg	Leu
				85					90					95	
Trp	Leu	Gln	Leu	Ala	Thr	Gly	Pro	Tyr	Val	Thr	Val	Ala	His	Val	Gln
		100						105					110		
Gly	Lys	Ala	Asn	Ala	Gly	Gly	Leu	Gly	Phe	Val	Ser	Ala	Cys	Asp	Ile
	115						120					125			
Val	Leu	Ala	Lys	Ala	Glu	Val	Gln	Phe	Ser	Leu	Ser	Glu	Leu	Leu	Phe
	130					135					140				
Gly	Leu	Phe	Pro	Ala	Cys	Val	Met	Pro	Phe	Leu	Ala	Arg	Arg	Ile	Gly
145					150					155					160

~~Resembg~~

Ile Gln Arg Ala His Tyr Leu Thr Leu Met Thr Arg Pro Ile Asp Ala  
165 170 175

Ala Gln Ala Leu Ser Trp Gly Leu Ala Asp Ala Val Asp Ala Asp Ser  
180 185 190

Glu Lys Leu Leu Arg Leu His Leu Arg Arg Leu Arg Cys Leu Ser Lys  
195 200 205

Pro Ala Val Thr Gln Tyr Lys Lys Tyr Ala Ser Glu Leu Gly Gly Gln  
210 215 220

Leu Leu Ala Ala Met Pro Arg Ala Ile Ser Ala Asn Glu Ala Met Phe  
225 230 235 240

Ser Asp Arg Ala Thr Leu Glu Ala Ile His Arg Tyr Val Glu Thr Gly  
245 250 255

Arg Leu Pro Trp Glu Ser  
260

<210> 18  
<211> 256  
<212> PRT  
<213> Myxococcus xanthus

<400> 18

Met Gly Ile Met Thr Glu Gly Thr Pro Met Ala Pro Val Val Thr Leu  
1 5 10 15

His Glu Val Glu Glu Gly Val Ala Gln Ile Thr Leu Val Asp Arg Glu  
20 25 30

Asn Lys Asn Met Phe Ser Glu Gln Leu Val Arg Glu Leu Ile Thr Val  
35 40 45

Phe Gly Lys Val Asn Gly Asn Glu Arg Tyr Arg Ala Val Val Leu Thr  
50 55 60

Gly Tyr Asp Thr Tyr Phe Ala Leu Gly Gly Thr Lys Ala Gly Leu Leu  
65 70 75 80

Ser Ile Cys Asp Gly Ile Gly Ser Phe Asn Val Thr Asn Phe Tyr Ser  
85 90 95

Leu Ala Leu Glu Cys Asp Ile Pro Val Ile Ser Ala Met Gln Gly His  
100 105 110

~~Residue~~

Gly Val Gly Gly Gly Phe Ala Met Gly Leu Phe Ala Asp Phe Val Val  
115 120 125

Leu Ser Arg Glu Ser Val Tyr Thr Thr Asn Phe Met Arg Tyr Gly Phe  
130 135 140

Thr Pro Gly Met Gly Ala Thr Tyr Ile Val Pro Lys Arg Leu Gly Tyr  
145 150 155 160

Ser Leu Gly His Glu Leu Leu Leu Asn Ala Arg Asn Tyr Arg Gly Ala  
165 170 175

Asp Leu Glu Lys Arg Gly Val Pro Phe Pro Val Leu Pro Arg Lys Glu  
180 185 190

Val Leu Pro His Ala Tyr Glu Ile Ala Arg Asp Leu Ala Ala Lys Pro  
195 200 205

Arg Leu Ser Leu Val Thr Leu Lys Arg His Leu Val Arg Asp Ile Arg  
210 215 220

Arg Glu Leu Pro Asp Val Ile Glu Arg Glu Leu Glu Met His Gly Ile  
225 230 235 240

Thr Phe His His Asp Asp Val Arg Arg Arg Ile Glu Gln Leu Phe Leu  
245 250 255

<210> 19

<211> 424

<212> PRT

<213> Myxococcus xanthus

<400> 19

Met Leu Asn Leu Ile Asn Asn His Ala His Gly Tyr Val Val Thr Pro  
1 5 10 15

Val Val Leu Ala Cys Asn Asp Ala Gly Leu Phe Glu Leu Leu Arg Gln  
20 25 30

Gly Pro Lys Asp Phe Asp Arg Leu Ala Glu Ala Leu Arg Ala Asn Arg  
35 40 45

Gly His Leu Arg Val Ala Met Arg Met Phe Glu Ser Leu Gly Trp Val

~~Residue~~

50						55						60			
Arg 65	Arg	Asp	Ala	Asp	Asp	Val	Tyr	Ala	Val	Thr	Ala	Ala	Ala	Ala	Ala 80
His	Arg	Ser	Phe	Pro	Arg	Glu	Ala	Gln	Ser	Leu	Phe	Ala	Leu	Pro	Met 95
Asp	Arg	Tyr	Leu	Arg	Gly	Glu	Asp	Gly	Leu	Ser	Leu	Ala	Pro	Trp	Phe
			100					105					110		
Glu	Arg	Ser	Arg	Ala	Ser	Trp	Asp	Thr	Asp	Asp	Thr	Leu	Val	Arg	Glu
		115					120					125			
Leu	Leu	Asp	Gly	Ala	Ile	Ile	Thr	Pro	Leu	Met	Leu	Ala	Leu	Glu	Gln
	130					135					140				
Arg	Gly	Gly	Leu	Lys	Glu	Ala	Arg	Arg	Leu	Ser	Asp	Leu	Trp	Ser	Gly
145					150					155					160
Gly	Asp	Gly	Arg	Asp	Thr	Cys	Val	Pro	Glu	Ala	Val	Gln	His	Glu	Leu
				165					170					175	
Ala	Gly	Phe	Phe	Ser	Ala	Gln	Lys	Trp	Thr	Arg	Glu	Asp	Ala	Val	Asp
			180					185					190		
Ala	Glu	Leu	Thr	Pro	Lys	Gly	Ala	Phe	Ile	Phe	Glu	Arg	Ala	Leu	Leu
		195					200					205			
Phe	Ala	Ile	Val	Gly	Ser	Tyr	Arg	Pro	Met	Leu	Ala	Ser	Met	Pro	Gln
	210					215					220				
Leu	Leu	Phe	Gly	Asp	Cys	Asp	Gln	Val	Phe	Gly	Arg	Asp	Glu	Ala	Gly
225					230					235					240
His	Glu	Leu	His	Leu	Asp	Arg	Thr	Leu	Asn	Val	Ile	Gly	Ser	Gly	His
				245					250					255	
Gln	His	Arg	Lys	Tyr	Phe	Ala	Glu	Leu	Glu	Lys	Leu	Ile	Ile	Thr	Val
			260					265						270	
Phe	Asp	Ala	Glu	Asn	Leu	Ser	Ala	Gln	Pro	Arg	Tyr	Ile	Ala	Asp	Met
		275					280					285			
Gly	Cys	Gly	Asp	Gly	Thr	Leu	Leu	Lys	Arg	Val	Tyr	Glu	Thr	Val	Leu
	290					295					300				
Arg	His	Thr	Arg	Arg	Gly	Arg	Ala	Leu	Asp	Arg	Phe	Pro	Leu	Thr	Leu

~~Resub~~

305					310					315					320				
Ile	Ala	Ala	Asp	Phe	Asn	Glu	Lys	Ala	Leu	Glu	Ala	Ala	Gly	Arg	Thr				
				325					330				335						
Leu	Ala	Gly	Leu	Glu	His	Val	Ala	Leu	Arg	Ala	Asp	Val	Ala	Arg	Pro				
				340					345				350						
Asp	Arg	Leu	Ile	Glu	Asp	Leu	Arg	Ala	Arg	Gly	Leu	Ala	Glu	Pro	Glu				
				355					360				365						
Asn	Thr	Leu	His	Ile	Arg	Ser	Phe	Leu	Asp	His	Asp	Arg	Pro	Tyr	Gln				
				370					375				380						
Pro	Pro	Ala	Asp	Arg	Ala	Gly	Leu	His	Ala	Arg	Ile	Pro	Phe	Asp	Ser				
385					390				395				400						
Val	Phe	Val	Gly	Lys	Ala	Gly	Gln	Glu	Val	Val	Pro	Ala	Glu	Val	Phe				
				405				410				415							
His	Ser	Leu	Val	Glu	His	Leu	Glu												
				420															

```
<210> 20
<211> 19053
<212> DNA
<213> Myxococcus xanthus
```

```
<400> 20
gtcgacgttg acgtcgcccg gtggcggtgcc gtgtgtcttc ttcgacgcgg aggtgcgcga 60
ggtaggcggcg gacggccggc gcgggcccgt gttgtcgcg gtgcgcgcgt atgcgccggg 120
actggcgctg cgtggccagc gcctccatgc ttcgggtgtcc ttttcgcccc cgtcgctgat 180
ggctccggtg gaggtgcgcc ggtgcaaggc cctgccaggc acggtgcccc cgtcctggta 240
tcagacggcg cacccgagg ccctgtcctg ggagcgcggtg ggcgcggtgg gcgaatcctg 300
cctcgtggtg ggtgaactcc ggagggggccc tgtcgagggc agctacgcc ttggtcggtcg 360
ggagggcggc cccgcgatgt tggtgctggg accccaggct ccggccacct gtgggacgct 420
ggcgcgccgg gcctggcggc acttcgcggc ggccgggggtg ctgtccatgg ccgcggccgt 480
cgtcctgtca ggggcgctgt gagacgcgcg gcggggggccc taccgccgcg ccagaaacgt 540
```

~~Recombinant~~

gatgcgccgc caggcctcgc ggtccgggca ctgacgcccg ggccgctcgg gactcgctca 600  
ggcggctccg gtgcttcgcg cgggtggagaa cacgagctgt tcctcgctgt ccgccacccg 660  
cacggtgagg gtccgctcca cgccggcgag gcccagcggc gtggactgcg ccagggtccga 720  
gagcagggag cccgcagcgc gcagggtggaa gccgggtggtc cacatgccct ccagctcgcc 780  
gaacacggtg cgcagctcgt ccggggcctt gcgttcgctg atggcgcggc gcaggcgcac 840  
catgccgctc acgaagttcc tgcaccgcat gagcgtgttg gggttcttgg agatgacctc 900  
cgcgaagctg aagttgccgc caccggggcg ccaactcgctt tcgatgagct gcaggtcctt 960  
gccaaggctc cgcaccgtgg ggtccttctg gaagtaccac ttggcgatct gcgcggcgcg 1020  
gctgggtgac aagtcattca gcatgaggct gccttgctcc tgcacctcgc ggaggtaggc 1080  
ctcccagatg ggggcgtaga ccgcgcgccg gaactcggcg gaggcgcggg gaagctgctc 1140  
gctccagggc agcgcgcggg ccagggcgcg tgagaagcgg gacagctcga gcgtctggat 1200  
gcggggcacc agggcgcgga acgagtcac cccatcttc agctcgagcc gcgtttcgat 1260  
ggggtgcttg cccatgtcct cctgcatggt gctgatgacg gtggccgcgt ccttcgcgtc 1320  
cagcacgccc cagacgacgg cgtcatccac cgctgctgc aggtccttgc gcgacagctt 1380  
cttctgcgct cccacagca tcagggtgcag gccgtagccg aagtcggagg ccacgggggt 1440  
gggagagaag cgcgtcatgt ccgccttcag gtccaccacc cactggccgc ggggtgccag 1500  
cagcttgctc tcgtagcccc ggcgtccgag gaacgccatg cgccgggcgc cctggaagtt 1560  
ctcctgcgtc acccaggact gcttgctgac gttcttcgcc ttgagcagct cgaacgagcc 1620  
cagccccagt gagaagccga tggcctgctg gcgcgtgagc gtggtggcgt gcaggtagtt 1680  
gcgcagctcg aactcgctct gctgggcggg gaggtcttc atccacttca gcagctccac 1740  
cagggtgccc ttgagcaggg actcgtggaa gcgcacgcg gtgacgtcct ccacgacgac 1800  
ctccagcagc gtggaggctc ccgacaggcg caggatttcg tactcgaagc cctcggcgac 1860  
ctgcgtgcgg acggcgttct ccagcgactc tgcgacgcg gccttgaagt cggcccaggc 1920  
ctgcggaagg ttggccgggt ccgcaagctg cgggtcgatg ccaaggcgct ccagcaccag 1980

~~Resembles~~

gcccagcacc ttctttctgat tgcgtccag cttcgccttg ctggccttgt ccaccaggcc 2040  
gtccatgatt tccaccgcgg tggcgccctt cttgacgagg tcgcgaagga cgggccccag 2100  
cagcgcttcc agcaactggc ccagttgggc cttcaccgtc gccgggtcca gcagctccac 2160  
ggtgatgccc aggccggcgg agagcgcttg ctcatgggac ttcaccttgc gcacggcgac 2220  
ctggatgcgg ccggcacggg gacgggagaa gctgagctgg tagtcgtcgg tgagggacac 2280  
ccgggcggac agggccgcct tggcgctggg cttcaacgcg agcagctcgt tgccgcgcag 2340  
gaagcccagg cggttgaggt tgggtgggaa gatgtccgcc cagttgagct ccagccgtgt 2400  
gtggagcgcg ccgcggacat gccacgccac cgcgtcccc gtggtcagct tggccaggtc 2460  
ggtggcctgc atcagccgca gctcggacag gtcggagcgc acggcctcac gcatgttctg 2520  
gcccagcggg tgcgcgcggt agtcgctgag cgtgacggac agctccgtct ggttctcgga 2580  
ggcgaggaag gacaggctgg cgctcacggc ggcccttcacg cgcgcggaca cctggtagcg 2640  
catccacccg atgtcactgc ccagcagcag ttggggccgg ggccctggct cggcgctctc 2700  
cgggctcggc tcgccgatga tgccgttttc gtccacgtcg cccagcgagt tgaagttccg 2760  
gatggacgct tcgccggtgg cttcgaagga gaggggtgaag ccgtgcatgg cgagcttggg 2820  
cggaaggatt ttctcttccg tgaaggctcc ctgggccagc ggcaccttga tgtcctggtc 2880  
ctgcagcttc acgtcgggca ccttgccccg cagcagtcg ggaagcttct ccagcagctt 2940  
gttgaccact ttcattgcgcg tccccctggg ctgaagcctc ctgcacgtgg gccggaggtc 3000  
tcttcgtcgt acgccgttgc ccagctcgga acaaggcgga taccagaaaa gaccggtggg 3060  
cagcggacag atgccctgga ggggtggggtg ggagccgccc ccgcgcggtg cgtcagggct 3120  
cgtcgcccaa tccgtactcc ttgagtttcc gcgcgagcgt gttgcggcca atcgccagca 3180  
cgcgggccgc ggcggtgcgg ttgcccttca cggcgtccag cacgcgcagg atgtggcggc 3240  
gttcgacctc cgccagtggc agcaggcccc catccagggg cgcaggcgca gtcggcgcgt 3300  
tgacaccctg agcggctgcg ggaggcggca gggcggcccc gtccacatcg ggcaggggca 3360  
ggtgctcttc gagaatctcc ccttcacaga gcaccacggc gctctcgata cagttctcca 3420

~~Revised~~

gctcccgcac gtttccgggc cagcggtagc gcttgaggcg ctccaccgcg gcggcgctga 3480  
ggcggggcgg cgtcagccgg tgcctccggg cgacggcggc gacgaagtgg cgggcgagcc 3540  
gctcgatgtc ctccgcgccg cgctcccgcg gcggcggcag caccacctcg accaccttga 3600  
tgcggtagta gaggtcctcg cggaagcggc cctcggccac catgcggggc aggtcccgat 3660  
gggtggccgc gacgatgcgc acgtccacct tcacggcctg ggtgcctccc acgcgctcga 3720  
actcgcgatc ctggatgacc cgcagcaact tgccctgcac cggcaggggc agctcgccaa 3780  
tctcgtcgat gaacacgggtg ccgccgctgg ccgcttcgaa cttgccgggc acgcggtggg 3840  
ccgcgccggg gaaggcgccg cgttcgtggc cgaagagctc gttctcgatg agcgtggcgg 3900  
gcagcgccgc gcagtccacc ttgatgaagg gctggtcctt gcggggacca ttcacgtgga 3960  
cggcacgggc gaacagctcc ttgccgctgc cactctcgcc gcgcagcagc accgtcgcat 4020  
cgggtgggcgc ggccttgccg accagtcggg agatggcctg gagctgcggg gactcgccga 4080  
tgatgcgggt gaagaagtag cccaccggta cctggggctg ctcccttcgcg cgctggagct 4140  
cttgatagag gctggtgctc tggagggcgg tgctcacctg cgaggcgatg gcggtgagcc 4200  
gctgcgtgtc ctcgtcgggtg aagcggtcct cgccgcggcg gttgaggacc tggagcacgc 4260  
cgtagagggc gccgtccccg tcgcgcagtg gcacggcgag caggctgggtg gtgcggtagc 4320  
ccgtcatccg gtcgatgtcc gcgaagaagc gctgctcgcc gcgcgggtcc ggcacgttga 4380  
tggcgtgccc cgccttggcg acggtgccgg cgacgccttg gccagcttg acgcgaatct 4440  
gggacacctc gggcaggtgc gcggcgcggc tgaacagctc gcggcgggcc ggggtccagca 4500  
gccagagcgt gccgcgggtc gcttgccagg tgatggcgat gcggtccatc agcgtctgga 4560  
ggaacgcgtc gaggtccacc tcctgcccga cgagtcctcc gaaggggagg aggacctggg 4620  
agacgtccga gggggcttgg ggcattggcg gcaacggcgg caggacgaag gcggaggccg 4680  
caccataaca tccagagggc atgggactgc cccctctcag gccgcgcggc ccagcaccag 4740  
ccgctggcct tcgcgtgcgg gctcgcacac ggggaagagg gcgcgggcct gctccgccat 4800  
gtcctcgagc atgtcgtcgc cgtgcgccgg gtcattgggtg aacaggcaca gccggcgcg 4860

~~Peccabag~~

ccccaccagc ccggccacgc ccgcggcatc catcatggtg gagtggcccc agcccttctt 4920  
cgccacgccc ttgcggccct cgtattcgtc cggcgtgtac tgcgcatcca ggcacaggac 4980  
gtccgcgccc tcgaagaggc ggcccacctc cggcgcgagc tcctgcaccc gcacctccac 5040  
gtccgtggcg tagacgaacg aatggccatc cgcctccagg cggtagccca ggcacccctg 5100  
cgggtgcggc acgtcgatgg gcgtgacgcg gaaggggccc acctccacgg gtcgggcatg 5160  
caacgccgag cggaagtcca tccgcgagcg catggtgctc agcggcaccc gaaaatgaag 5220  
cggctgcatc tgcgcggcca actcggactg gagcgcctgg gcccattcg cggccggacc 5280  
gtagagcgtc agctcggacg tgggcagcca ggccggcgtg aagaagggga agccctgcac 5340  
gtggtcccaa tgcagatgcg agaagaagag cgtggcctcc tggggcgcg cctcgcgcat 5400  
catgatttcg ccagtgcg cggatgccgt ccccgcatcc aggatgaggc ggtggccctg 5460  
gctggtcacc tccacgcagg ccgtgttgcc accaatgcgc gagcccgaca ccgcgatgct 5520  
ccccgaacg ccatgaaacc ggacttccat cgtaagtctc cttgaatggg gggcctccgc 5580  
ctgggacgcc ctcatgcccg gagcctcaga gcacgggggtg tgccattccc aaatgcccg 5640  
aatcaggagc gcgggcctcg ggctcgtcca ccggtgctcc agaatggatc gcgctcgct 5700  
ggtgcgggcg atccaaagcg gtgcaggctg cccgcaggac ggggcggcgg gcacgtcttc 5760  
caacgtccca cggcagtcct gtcttcagat ctctcccgat gcgggaaggc gtccaggagg 5820  
ttgcaccgg catcgagcgg ggctgtgtgt ttcaagtctt gtcggagcct cggacacaac 5880  
cgtctggggt ctgggaatgc gccggcttcc gttcactcca gagtgattca atggctctcg 5940  
agtgcagggt tagcaatcct cgggccgtaa ccacgccgtt gaaggcagtc acgtctcgt 6000  
cacgcttggg gtgtttccag cttcaacggt gtttatcctt cagggcgggt tgcttgacac 6060  
gctgcctcat ggaagcgtat gcaaaacaat gaaaacgggt tcgttgccga gccttagggc 6120  
ctccagaacg ccatcctcgc ggaccaggc agccggaatt tgagacgggg ctgtcagcgg 6180  
tttgaacgca aggatgcggc gggggttggt gcggcagccc gaccagaatt cggttggtgt 6240  
gccagttatt gtcagattct gagaaatagc aggctggggg gaagttgcaa tgcctggggc 6300

~~Rosenberg~~

gcggtgtgct gagaacgatt gggttgcatt gctcgtccgc gtcaatcacg agaaagtggc 6360  
tgccgctcag ttggggaaac acggctacga gttcttcttg ccgacgtaca cgcctcccaa 6420  
gtcctcgggt gtgaaggcga agcttccgct cttccccggg taccttttct gtcgttacca 6480  
gccgctcaat ccgtaccgca tcgtccgggc gcccggggtc atccggctgc tcggaggtga 6540  
cgcggggccg gaagccgtgc ccgcacagga attggaggcc atccgccggg tcgcggattc 6600  
gggtgtctct tccaatccct gtgactatct gcgggtgggg cagcgcgtgc gcatcatcga 6660  
agggcccctg acaggtctgg aaggaagtct ggtgacgagc aagagccaac tccggttcat 6720  
tgtctccgtg gggctgctac agcgtccggt gtccgtggag gtgagcgccg agcaactgga 6780  
accgatcacc gactgattcc gcggacatcc ccttccattc cttcatcacc ccgacccgca 6840  
gcaaggcttc agggaccgtg agtcgttcca tggacaagag aattattttc gacatcgtca 6900  
ccagcagtgt tcgggaggtg gtacccgaac tcgaatcaca tccgttcgag ccggaggatg 6960  
acctggtcgg actgggcgcg aactcgctcg accgcgccga aatcgtcaac ctcacgctgg 7020  
agaagctggc gctcaacatc ccccgggtcg agctgattga cgcgaagacc attggcgggc 7080  
tggtggacgt ccttcacgcg aggctgtgag gcgaagccat ggggccggtc gggattgaag 7140  
ccatgaatgc ctactgtggc atcgccaggt tggatgtgtt gcagctggcg acccaccgtg 7200  
gcctggacac ctcccgttc gcgaacctgc tcatggagga gaagaccgtc ccgctcccct 7260  
atgaggaccc tgtcacctac ggcgtgaatg ccgcccggcc catcctggac cagttgaccg 7320  
cggcggaacg ggacagcatc gagctgctgg tggcttgac ggagtcctcg ttcgacttcg 7380  
gcaaggccat gagcacctac ctgcaccagc acctggggct gagccgcaac tgccggctca 7440  
tcgagctcaa gagcgctgc tactccgggg tcgccgggct gcagatggcc gtcaacttca 7500  
tcctgtccgg cgtgtcgccg ggggccaagg ccttgggtgtt ggcctccgac ctgtcgcgct 7560  
tctccatcgc cgaaggggga gatgcctcca cggaggactg gtccttcgcg gagccgagct 7620  
cgggtgcggg cgcggtggcc atgctggtga gcgacaogcc ccgggtgttc cgcgtcgacg 7680  
tgggggcgaa cggctactac ggctacgagg tgatggatac ctgccgcccg gtggcggaca 7740

~~Rosenberg~~

gcgaagcggg agacgcggac ctgtcgctcc tctcgtaacct ggactgctgt gagaacgcct 7800  
tccgggagta caccgcgcgc gtccccgcgg cgaactacgc ggagagcttc ggctacctcg 7860  
ccttccacac gccgtttggc ggcatggtga agggcgccca ccgcacgatg atgcgcaagt 7920  
tctccggcaa gaaccgcggg gacatcgaag cggacttcca gcggcgagtg gccccgggc 7980  
tgacctactg ccagcgcgtg gggaacatca tgggcgcgac gatggcgctc tcgctcctcg 8040  
ggaccatcga ccacggcgac ttcgccaccg cgaagcggat tggtgcttc tcgtatggct 8100  
cggggtgcag ctccggagttc ttcagcggcg tggtagcgga ggaagggcag cagcggcagc 8160  
gcgccctggg gctgggagaa gcgctggggc gccggcagca gctctccatg ccggattacg 8220  
acgcgctgct gaaggggaac ggcttgggtgc gcttcgggac ccggaacgcc gagctggatt 8280  
tcggtgtcgt cggcagcatc cggccgggcg ggtggggcag gcccttgctc ttcttgtcgg 8340  
cgattcgtga cttccatcgc gactaccaat ggatttccta gcctcggggc ttcgagcaaa 8400  
gccatgtcca gcgtagcgac ggccgtcccc ctgacggccc gtgacagcgc ggtgagccgc 8460  
cggctgcgaa tcacccccag catgtgcggc cagacgtcct tgttcgccgg gcagattggc 8520  
gactgggcat gggacaccgt cagccgcctg tgtggcacgg acgtgctgac cgcgaccaac 8580  
gcctcaggcg cgcccaccta cctggccttc tattacttcc gcatccgggg caccgccgcg 8640  
ctgcatcccc gcgcgctgcg cttcggcgac acgctggacg tcacgtcgaa ggcgtacaac 8700  
ttcggcagcg aatccgtcct gacggtgcac cgcacatcgca agacggcgga gggcggcgct 8760  
ccggaggcgg atgccttcgg ccatgaagag ctgtacgagc agccccagcc aggccgcac 8820  
tacgcggaga cttcaaccg gtggatcacg cgctcggacg gcaagtcgaa cgagagcctg 8880  
atcaagtcct cgcccgtggg gttccagtac gcacacctgc cgctcttgcc ggacgaatac 8940  
tcgccgcggc gggcctatgg ggacgcgcgg gcgcggggca cctttcacga tgtggactcc 9000  
gcggagtacc ggctgaccgt ggaccgcttc ccgctgcgct acgcggtgga cgtcatccgg 9060  
gacgtcaatg ggggtggggct catctacttc gcgtcgtatt tctcgatggt ggactgggcc 9120  
atctggcagc tggcgaggca ccagggacgc agcgagcagg ccttcctgtc gcgcgtggtg 9180

ctggaccagc aactgtgctt cctcggcaac gcggcgctgg acaccacctt cgacatcgac 9240  
gtgcagcact gggagcgggt gggcggcggg gaagagctgt tcaacgtgaa gatgcgcgag 9300  
ggcgcgcagg gccgggacat cgccgtggcg acggtcaagg tgcgcttcga cgccgcttcg 9360  
gaaggaggcc gccgtgggtg agccgatgac agacgaacaa atccgcggag tcgatgcacca 9420  
gtccatcggtg cgcgtcctgc cccgcgtgcg ctccaacgag attgcggggc acttgaacct 9480  
ccgcgagctg ggcgcggact ccgtggaccg ggtcgagatt ctacgtcca tctggacag 9540  
cctgcggctg cagaagacgc cactggcgaa gtccgcgcac atccgcaaca tcgacgcgct 9600  
ggtggcgctt ctggccgggt aggtcgcggg tggctgagcg ggttcccggc ggagtcggca 9660  
tcgaggccat caacgcctac ggcggcgccg cctccattcc ggtgttgagc ttgttccggg 9720  
gccggcggct ggaccccgaa gcgattctcc aacctgatga tgcaggagcg cggcgtcgcg 9780  
ctgccgttcg aggaccccg caccaacgcg gtcaatgcgg cgcggcccat cctggacgcg 9840  
atgtcgcggc agggccggga gcgcatcgag ctctgtgtca cctcgagcga gtccggcggtg 9900  
gacttcagca agtccatctc ctcgatatgcg cagcagcacc tggggctgag ccgccactgc 9960  
cggttcctgg aggtgaagca ggcgtgttac gccgccaccg gagcgtcca gctagcgtg 1002  
0  
ggctacatcg cgtcgggcgt gtcaccgggg gccaaaggccc tggatgattgc cacggacgtg 1008  
0  
acgctggtgg acgagagcgg tctgtactcc gagccggcga tgggcaccgg cggcgtcgcc 1014  
0  
gtgctgctgg gcgacgagcc gcgcgtgatg aagatggacc tgggagcggt cggcaactac 1020  
0  
agctacgacg tcttcgacac cgcgcggccc tcgccggaga ttgatatcgg cgacgtggac 1026  
0  
cggtcgctct tcacgtacct ggactgcctc aagcacagct tcgccgcgta tggccgcggg 1032  
0  
gtggacgggt tcgacttcgt gtcgacgttc gactacctgg cgatgcacac gccgttcgcc 1038  
0  
ggactggtga agggcgggca ccgcaagatg atgcgcgagc tcaccccggt cgacgtggac 1044  
0  
gaaatcgaag cggacttcgg ccggcgcgtg aagccgtcac tgcagtacc gagtctggtc 1050  
0  
gggaacctgt gtcgggctc cgtgtacctg agcctgtgca gcatcatcga caccatcaag 1056  
0  
cccgagcggc ccgctcgggt gggaatgttc tcctatgggt cgggttgctc gtcggagttc 1062  
0

~~Recombinant~~

ttcagcggcg tcatcggccc ggagtcctgt tccgcgctag ctgggttgga catcgggtggc 1068  
0  
cacctccggg ggcgccgcca gctcacgttc gaccaatatg tcgaattgct gaaagagaac 1074  
0  
cttcgctgtc tggttccaac gaagaaccgg gacgtggacg tggagcgcta cctcccgtg 1080  
0  
gtgacgcgga cggcgagccg cccgcgcatg ctcgccttgc gaagggtcgt ggactatcat 1086  
0  
cgtcagtacg agtgggtgta gctcatacgc cacctccaat tccgacgaat gaacactcct 1092  
0  
tccttgacga actggcctgc ccgcctgggc tatctccttg ccgttggcgg cgcattggttc 1098  
0  
gcggccgcatc aagtcaccaa acagatggcg cgcgacgggg cgaaaaggcc cgtcgcggtc 1104  
0  
ttcgatagct ggtggcactt ccactacgtg gagaaccgag cgggtgcgtt cggctctgttc 1110  
0  
tccagcttcg gcgaagagt ggcgatgcct ttcttctacg tcgtgggcgc catctgcac 1116  
0  
gtggtgctga ttggctacta cttctacacg ccgccgacga tgaagctcca gcgctggctc 1122  
0  
ctggcgacga tgattggcgg cgcgttgggc aactacgtgg accgggtgcg cctgcgctac 1128  
0  
gtggtggatt tcgtgtcatg gcacgtgggg gaccgcttct attggccctc cttcaacatc 1134  
0  
gcggacacag cggtagtcgt aggggccgcc ctgatgatcc tggagtcgtt ccgcgagccg 1140  
0  
cgtcagcagt tgtctcccgg ataggccccg ccatgggtgt gcggtcggcc gccggggccaa 1146  
0  
ggactggagt tcatggggac ctcagagcca gttgagccgg accacgcctt gtcaaaacca 1152  
0  
ccgcctgtcg cgcctgtcgg cgcctaggca ctgcctcgcg gtccggcaat gcccggcac 1158  
0  
gcgcagttga tgatgttggt cctgcggccc acggagttcc tggaccgctg cgcgcgccgg 1164  
0  
tacggtgaca ccttcaccct caagattccg gggacgccgc cgttcatcca gaccagcgat 1170  
0  
cccgccttga tcgaggtcat cttcaagggt gaccgcgacc tcttcctcgg aggggaaggcg 1176  
0  
aacaacgggt tgaagccggt ggtgggtgag aactcgctgc tgggtgttgga cgggaagcgg 1182  
0  
caccggcgtg atcgcaagct catcatgccc accttcctgg gtgaacggat gcatgcgtat 1188  
0  
ggctcgggtc tccgggacat cgtcaatgcg gcgcttgacc ggtggcccgt cgggaagccg 1194  
0  
ttcgcggtcc atgaagagac gcagcagatc atgctggagg tgattctccg ggtgattttc 1200  
0  
ggcctggagg acgcccggac cattgcccag ttccggcacc acgtgcacca ggtgctcaag 1206  
0

~~Rosenberg~~

ctggccctgt tccctgttccc gaacggggag ggcaagcccg ccgccgaggg cttcgcgcgg 1212  
0  
gccgtgggca aggcgtttcc ctccctggac gtgttcgcgt cgctgaaggc gattgacgac 1218  
0  
atcatctacc aggagattca ggaccgccgg agccaggaca tcagcggggc gcaggacgtg 1224  
0  
ctctcgtga tgatgcagtc gcactacgac gacggctccg tgatgacgcc ccaggagctg 1230  
0  
cgcgacgagc tgatgacgct gctgatggcg ggccacgaga cgagcgcgac catcgccgcg 1236  
0  
tggtgcgtct accacctctg ccgtcaccgg gatgcgatgg gcaagctgcg tgaggagatc 1242  
0  
gcggcccaca cgggtggacgg cgtgctgccg ctggcgaaga tcaacgagct gaagttcctg 1248  
0  
gatgccgtgg tcaaggagac gatgcgcac acgcccgtct tcagcctggg ggctcgcgtg 1254  
0  
ctcaaggagc cacagaccat tggcggaacg acgtaccggc cgaacgtggg gctgtcgccc 1260  
0  
aacatctacg gcacgcacca tcgcgcggac ctgtggggag acccgaaggt ctttcggcca 1266  
0  
gagcgtttcc tggaggagcg ggtgaatccg ttccactact tccccttcgg agggggcatc 1272  
0  
cggaagtgca tcgggacgag cttcgccctac tacgagatga agatcttcgt ctcgagagacg 1278  
0  
gtgcgccgca tgcgcttcga taccaggccc ggctaccacg cgaaggtggg gcgccggagc 1284  
0  
aacacgctgg cgccgtctca gggcgtgcc atcatcgtcg agtcgcggct gccgagctga 1290  
0  
accgcttggc cccaccatct ccagcgcggg gaacatcatg gtcgattcag tgtcgaaaca 1296  
0  
ggcacggcgg aaggtgtttc ttttttcgg ccagggcacc cagtcgtact tcatggccaa 1302  
0  
ggagctgttt gacaccaga cggggttcaa gcggcagctg ctggagctgg acgagcaatt 1308  
0  
caagcagcgg ctggggcact cgattctcga gcgaatctat gacgcgcgcg ccgcgcggtt 1314  
0  
ggatccgctc gacgatgtcc tgggtgcctt tcccgccatc ttcattgattg agcatgcgct 1320  
0  
ggcgcggctg ctcatcgacc ggggtatcca gccggacgct gtcgtggggc ccagcatggg 1326  
0  
cgaggtggcg gcggcggcga ttgcgggcgc aatctcagtg gacgcggccg tggccctggg 1332  
0  
ggcggcgcag gccagctct ttgcccgtac ggccgcgcgg ggccgcatgc tcgcggtgct 1338  
0  
tcacgaactg gaagcctgcc ggggcttcac gtccgtcgcg cgggatggcg aggttgcagc 1344  
0  
catcaactac ccgtcgaact tcgtccttgc ggcggatgag gcgggcctgg gacggattca 1350  
0

~~Rosenby~~

gcaggaactc tcccaacgct cggtggcggt ccaccgggtg ccggtgcgct acccctttca 1356  
0  
ttcctcgcac ctggacccgc tgagggagga gtaccgaagc cgcgtccgcg cggattcgct 1362  
0  
gacgtggccg cgaatcccca tgtactcgtg caccaccgcg aaccgggtgc acgacctgcg 1368  
0  
cagcgaccac ttctggaacg tgggtccgcg gcccatccag ctgtacgaca ccgtcctgca 1374  
0  
actggagggg cagggcggtt gcgacttcat cgacgtcggc cccgccgcgt ccttcgcgac 1380  
0  
catcatcaag cgcatacctc gcggggactc cacgtcacgg ctcttcccgt tgctcagccc 1386  
0  
ttctcccgca tcgaccggga gctcgatggg gtgacgcgga gctgcgcgat gacggaggcg 1392  
0  
cccgaccca gggcgccctg gcaggtgccg ccgccgccga gctcgccctg ggcgctgcac 1398  
0  
acccgaggag cggcgagcgc gccggtgaat gcccgcaagg ccgcgctctt cccggggcag 1404  
0  
ggctcgcagg agcgcggcat gggggccgcg ctcttcgacg agttcccga cctgacggac 1410  
0  
atcgccgacg ccatacctgg gtattccatc aagcgtctct gtttggagga cccaggcaag 1416  
0  
gagctggcgc agacgcagtt caccagccg gcgttgtagc tgggtgaacgc gctcagctac 1422  
0  
ctgaagcggc tgctgaagg agcggagcag ccggccttcg tcgcgggcca cagcctgggc 1428  
0  
gagtacaacg cgctgctggt cgcgggggccc ttcgacttcg agacgggact gcggctggtg 1434  
0  
aagcggcggg gcgaactcat gagcggcgcg tccggaggga ccatggccgc ggtggtgggc 1440  
0  
tgtgatgccg tggccgtgga acaggtcctt cgagaccgtc agctgaccag tctggatatc 1446  
0  
gccaacatca actcgcccga ccagattgtg gtctccggac cggcgcagga catcgagcgg 1452  
0  
gcacggcagt gtttcgtgga ccgtggcgcg cggtagcttc cgctcaacgt gcgagcgccg 1458  
0  
tttactcgc gctacatgca gccggccgcc agcgagttcg agcgcttcct gtctcagttc 1464  
0  
cagtacgcgc cgctccggtg cgtgggtcat tccaacgtca cgggccgacc ttacgctcat 1470  
0  
gacaacgtgg tgcaggggct ggctctgcaa ctgcgcagcc cgggtgcagt gacggccacc 1476  
0  
gtccgctacc tcctggaaca gggcgtggag gacttcgagg agctgggccc cggccgcgtg 1482  
0  
ctgaccgcc tcataccgc gaacaagcgg ggcgcccccg caccggccac cgccgcgcc 1488  
0  
gcgaagtggg cgaatgcctg agccctccgg agcgtcggtg aaatcctcgg ccggtgggccc 1494  
0

~~Rosenberg~~

gtccggctgc tgagaccact gaatgtccac ctcacctgtg caggagctgg ttgtctcggg 1500  
0  
gttcgggggtc acctccgcca ttggccaggg ggccgcgtcc ttcacctcgg cgctgctgga 1506  
0  
gggcgcgga cggttcggg tgatggagcg gccgggccgt cagcatcagg ccaacgggca 1512  
0  
gacgacggcc cacctggggg cggaatcgc ctcgctggcc gtgcccgaag gcgtcacccc 1518  
0  
acaactgtgg cgctcggcca cgttttcggg gcaggccgca ctggtgaccg tccacgaggc 1524  
0  
ctggaacgcg gcgcgcctcc aggccgtccc cggacaccgg attggattgg tgggtggggg 1530  
0  
caccaacgtg cagcagcgcg acctggtgct gatgcaagac gcctatcgcg agcgggtgcc 1536  
0  
ctttctgcgg gcggcctacg ggtcgacctt catggacacc gacctcgtgg gcctctgcac 1542  
0  
gcagcagttc gccatccacg ggatgtcctt cacgggtggga ggcgcacg ccagtggcct 1548  
0  
gctggcggtc atccaggccg cggaggcggt gctctcaaga aggggtggacg tttgcatcgc 1554  
0  
cgtgggggcg ctgatggacg tctcctactg ggaatgccag ggctgcggg ccatgggcgc 1560  
0  
gatgggcacc gaccggttcg cgcgggagcc ggagcgtgcc tgccggccct tcgaccggga 1566  
0  
gagtgatggc ttcactcttg gagaggcgtg cggcgccgtg gtggttgagt ctgcggagca 1572  
0  
cgctcggcga cgcgggggtga ctctcgcgg catcctgtcg ggctgggcca tgcagttgga 1578  
0  
cgcgagccgc ggcccgttgt cgtccatcga aggggagtcg caggtgattg gggctgcgct 1584  
0  
gcggcacgcg gacctcgcgc cggagcgggt ggactacgtg aatcctcacg gcagcggttc 1590  
0  
gcgtcagggg gatgccatcg agctgggggc cttgaaggcg tgcggcctga cgcacgcccg 1596  
0  
ggtcaacacc acgaagtcca tcaccgggca tggcctgtcc tcggcgggtg ccgtggggct 1602  
0  
catcgccacg ctggtccagt tggagcaggg ccggctgcac ccgtccttga acctggtgga 1608  
0  
cccgattgat tcatcgttcc gctgggtggg ggccaccgcg gaggcccagt ccctccagaa 1614  
0  
cgcgctggtg ctgcctacg gcttcggcgg catcaacacc gctgtcgccg tgcgccggag 1620  
0  
cgccacggag agctgacacg cccatgcaag ccgcttcccc tccgcaccgc gactaccaga 1626  
0  
cgctccgggt ccgcttcgag gcgcagacct gttttctcca gctccaccgg ccggatgcgg 1632  
0  
acaacaccat cagccgcacg ctgattgacg agtgccagca ggtgctcacg ttatgtgagg 1638  
0

~~Rosenberg~~

agcacgccac cacggtggtg ctggaaggcc tgccacacgt gttctgcatg ggcgcggatt 1644  
0  
ttcgagccat ccacgaccgg gtcgacgacg gccgccggga gcaaggcaac gcggagcagc 1650  
0  
tgtaccggct gtggctgcaa ctggcgacag gcccctacgt gacggtcgcc catgtgcagg 1656  
0  
gcaaggccaa cgcggggcggc ctgggcttcg tcgccgcgtg cgacatcgtg ctggcaaagg 1662  
0  
cggaggtcca gttcagtctc tccgagctgc tgttcgggct gttccccgcc tgcgtgatgc 1668  
0  
cgttcctcgc ccggcgaatc ggcattccagc gggcgacta cctgacgctg atgacgcggc 1674  
0  
ccatcgacgc ggcccaggcg ctgagctggg ggttggcgga cgcggtggac gccgatagcg 1680  
0  
agaagctgtt gcggtccac ttgcgaggc tgcggtgcct gtcgaagcca gcggtgacct 1686  
0  
agtacaagaa gtacgcctcc gagctgggcg gccagctgct cgcggccatg ccccgggcca 1692  
0  
tctccgcaa tgaggcgatg ttctccgacc gcgccacgct ggaagccatc catcgctacg 1698  
0  
tgagacagg ccgactccca tgggaatcat gacggaagga acgccaatgg cgcggtggt 1704  
0  
cacgtccat gaggtggagg agggggtggc gcagatcacc ctggtggatc gcgagaacaa 1710  
0  
gaacatgttc agcgagcagc tcgtgcgcga gtcattcacc gtgttcggca aggtgaatgg 1716  
0  
aaacgagcgc taccgcgcgg tgggtgtcac cggctacgac acctacttcg cgctcggcgg 1722  
0  
gaccaaggcc ggctgtgtt ccattctcga cggcatcggc tccttcaacg tcaccaactt 1728  
0  
ctacagcctc gcgctggagt gcgacatccc ggtgatttcc gccatgcagg gacatggcgt 1734  
0  
aggcggcggg ttccgcatgg ggtgttccgc ggacttcgtg gtcctgagcc gggagagcgt 1740  
0  
ctacacgacg aacttcatgc gctacggctt cacgccgggg atgggcgcca cgtacatcgt 1746  
0  
gccgaagcgg ctgggggtact cgctcgggca tgagctcctg ctcaacgcca ggaactaccg 1752  
0  
cggcgccgac ctggagaagc ggggcgtgcc ttttccgggtg ttgccgcgca aggaagtctt 1758  
0  
gccccacgcc tacgagattg cgagggacct ggccgcgaaa cctcggctgt cgctcgtgac 1764  
0  
gctcaagcgg cacctgggtc gcgacatccg ccgagagctt ccggacgtca tcgagcgtga 1770  
0  
gctggagatg cacggcatca ctttccatca cgacgacgtg aggaggcgca tcgagcagct 1776  
0  
gttctctga ggcgcgcccc tatgttgaac ctgatcaaca accacgcaca cggttatgtg 1782  
0

~~Rosenberg~~

```

gtcacgccccg tggtcctggc ctgcaacgac gctggcctgt tcgaactcct gcggcagggga 1788
0
ccgaaggact tcgaccgggtt ggcggaggca ttgcgtgcca accggggaca tctgcgcgtc 1794
0
gcgatgagga tgttcgaatc gctcggctgg gttcgccgcg acgcggatga cgtgtacgcg 1800
0
gtgacggcgg cggcggccgc gcatcgggtc tccccccgcg aggcgcagtc gctcttcgcg 1806
0
ctgcccattg accgggtacct gcgcggggag gacggcctgt ccctggcgcc gtggttcgag 1812
0
cgctctcggg cgtcgtggga taccgatgac acgctggtgc gcgagctgct cgacggcgcc 1818
0
atcatcacgc cgctgatgct cgcgctggag cagcgtgggg gcctcaagga ggcgaggcgt 1824
0
ctgtccgacc tgtggtccgg gggggatgga agggacacgt gcgtccccga ggccgtccaa 1830
0
cacgagctgg ccgggttctt ctccgcgcag aagtggacgc gtgaggacgc cgtcgacgcg 1836
0
gagctcacgc ccaagggcgc cttcatcttc gagcgggcat tgctcttcgc catcgtcggc 1842
0
tcgtaccggc cgatgctggc cagcatgccg cagctgctct tcggtgactg cgaccaggtc 1848
0
ttcgggcggg acgaagcggg ccacgaactg cacctggacc gaaccctcaa cgtgattggg 1854
0
agcggccacc agcaccggaa gtacttcgcg gagctggaga agctcatcat caccgtcttc 1860
0
gatgccgaga acctgtcggc acagccgcgc tacatcgcg acatggggtg cggtgacggc 1866
0
acgctcctga agcgggtgta tgaaacggtg cttcggcaca cgcggcgggg aaggcgctc 1872
0
gaccggtttc cgctcacgct catcgccgcg gacttcaacg agaaggcgct cgaagccgct 1878
0
gggcggacgc tggccgggtt ggagcacgtt gccttgccgc cggacgtggc gcggccggac 1884
0
cgtctcatcg aggacctgcg ggcgcgcggg ctagccgagc ctgagaatac gctgcacatc 1890
0
cgctcgtttc tcgaccacga ccgtccctac cagcctccc cggacagggc ggggctccac 1896
0
gcccggttcc cgttcgattc ggtgttcgtg ggcaaggcgg gccaggaggt ggttccggcg 1902
0
gaggtgttcc acagcctggt ggagcacctc gag
3
1905

```